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The Great Salt Lake: Major Economic Impacts of High Lake Levels

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Introduction

Historically, the Great Salt Lake has fluctuated over an elevation range of approximately 20 feet since the Salt Lake Valley was settled. The highest level was recorded in 1873 when the lake reached 4211.6 feet. A series of at least four major down/up cycles followed until the lake receded to 4191.35 feet, its lowest level, in 1963. From that point the lake rose at an alarming average rate of about 0.7 feet per year for a 13-year period. By 1976, the mineral industries around the lake's shore were experiencing financial strain due to productivity losses and structural damages.

In 1977, the Great Salt Lake Resource Management Study was initiated by Governor Scott M. Matheson, and assigned to a consortium of universities composed of the University of Utah, Utah State University, and Brigham Young University. The study consisted of a number of parts among which were an assessment of damages incurred by industries and other economic activities at both extreme high and low lake levels, a cost-benefit analysis of the breaching of the Southern Pacific causeway, and an exploration of alternative methods of lake elevation control.

In the years following the study the lake receded two feet and then leveled off, diminishing the concern about potential flooding. The situation changed drastically, however, in 1983, due to a record increase in the lake elevation of five feet.

The approaching crisis prompted the Utah Division of Water Resources to extend a contract to the University of Utah through the Bureau of Economic and Business Research to again assess the actual and potential damages associated with various lake levels. This article summarizes the findings of this recently completed study[1] and concludes with a discussion of the difficulty involved in evaluating the cost effectiveness of lake level control projects.

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[1] *Actual and Potential Damages Incurred by Industries, Governments, and Other Lake Users Due to the Rising Level of the Great Salt Lake*, Bureau of Economic and Business Research, due December 1983. The research project was funded by a contract with the Utah Department of Natural Resources. The Bureau acknowledges the assistance of Norman Stauffer, Paul Summers, and Temple Reynolds. University faculty and staff who participated in various parts of the work were: Iver E. Bradley, Bruce F. Baird, Kenneth R. Beier, Cathy Crawford, Boyd Fjeldsted, James E. Gander, Susan A. Hines, Frank C. Hachman, R. Thayne Robson, Constance C. Steffen, Rodger Weaver, Jerome D. Wiest, and Mari Lou Wood.

Scope of the Study

In brief, the research team investigated damages or costs which may be sustained by economic activities as a result of the Great Salt Lake rising to levels between 4202 and 4212 feet. Damages caused by flooding as well as wind and wave action were assessed. Four basic categories of damages and costs were examined – capital investments/capital losses, annual revenue reductions of private firms, annual household income losses, and annual tax revenue reductions to state and local governments. The economic activities which are directly affected by the lake's level include:

1. Firms extracting minerals from the lake – Amax Magnesium Corporation, Great Salt Lake Minerals and Chemicals Corporation, Morton Salt Company, American Salt Company, Domtar Industries, and Lake Crystal Salt Company;

2. Transportation systems near the lake's shores, among which are railroads, highways, secondary roads, and to a limited extent the Salt Lake City International Airport;

3. Recreation facilities, both state parks and private concessions, such as the Saltair Resort and Saltair Marina;

4. Waterfowl management areas, which involve the federally-controlled Bear River Migratory Bird Refuge, as well as state bird refuges and private duck and geese hunting clubs;

5. Land around the lake which is generally used for grazing livestock;

6. Facilities maintained by various utility companies and several water treatment plants.

Capital Damages

The rising level of Great Salt Lake threatens a wide range of public and private facilities situated near its shores. Companies which extract minerals from the lake, roads and highways, railroads, waterfowl management areas, state parks and park concessions, Mountain Bell, Mountain Fuel, Salt Lake City International Airport, and several sewage treatment plants are expected to sustain capital damages at lake levels between 4202 and 4212 feet. The damage already has been substantial, $60.3 million at a lake level of 4205 feet. Each additional one-foot rise in the lake has the potential to significantly increase capital damages until at 4212 feet the total may exceed $269 million (Table 1).

No single measure of capital damage can be easily applied to the many facilities affected by rising lake levels. Thus capital damages have been defined in a variety of ways in the study in order to as accurately as possible assess the actual and future costs to firms and government entities. These damages may be represented by investment in flood control measures, replacement costs, original costs, or the cost of constructing improved structures.

Much of the capital damage incurred at 4205 feet represents the actual costs of preventive measures such as diking, sandbagging, and pumping. In 1983, outlays for flood protection purposes have totaled $19.2 million by lakeside industries, $23 million by railroads, and $657,000 by state parks and park concessions. Investments in protective measures are cited at higher lake levels also, if it appears likely that facilities will be protected from flooding rather than being allowed to be destroyed. Both AMAX and Salt Lake City International Airport are prepared to dike and pump to insure continued operations at lake levels even above 4212 feet, and the Union Pacific and Southern Pacific Railroads intend to make whatever investment is necessary to maintain their tracks above the lake's waters.

Replacement costs are generally cited if structures are likely to be restored to their original condition. Damages to many roads, facilities in waterfowl management areas, and public utilities are expressed in terms of replacement costs.

Original costs as estimated by the firms are used to describe the capital damages to mineral industries in the event of a wipe-out. Reinstatement of these businesses is questionable; therefore, original costs seem to be a more appropriate damage estimate than replacement costs.

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Table 1
Capital Damages as a Function of the Level of Great Salt Lake
(thousands of dollars)

Lake Elevation	Lakeside Industries	Roads and Highways[a]	Railroads	Waterfowl Management Areas	Recreation Areas	Public Utilities	Other Public Facilities	Cumulative Total	Incremental Damages
4200		882						882	882
4201	25	882						907	25
4202	1,025	882						1,907	1,000
4203	2,861	882						3,743	1,836
4204	4,761	882						5,643	1,900
4205	19,276	14,812	23,037	2,500	657			60,282	54,639
4206	31,666	14,812	23,537	7,500	1,207	203		78,925	18,643
4207	37,206	40,562	24,037	13,700	1,207	304		117,016	38,091
4208	107,206	42,007	24,537	21,500	4,707	710	188	200,855	83,839
4209	107,206	42,377	25,037	28,500	7,707	710	198	211,735	10,880
4210	133,206	42,657	25,537	34,400	7,707	710	273	244,490	32,755
4211	134,486	42,907	42,037	37,800	7,707	710	273	265,920	21,430
4212	135,486	43,157	42,537	38,700	7,707	1,088	394	269,069[b]	3,149

[a]These figures are based on capital investments of $13,000,000 to raise the northern causeway to Antelope Island and $25,284,000 to raise I-80 near the South tip of the lake. Alternatively, if the causeway were repaired at a cost of $1,000,000 and the highway diked for $500,000, total damages at 4212 feet would only be $6,373,000.

[b]If the lower road and highway cost figure of $6,373,000 at 4212 is used, then the total capital investments and losses amount to $269,069,000.

Source: Bureau of Economic and Business Research, University of Utah, October 1983.

Some road and highway damage costs may feasibly exceed their replacement costs; therefore, the costs of the proposed improvements are noted. For example, if diking proves to be an unsatisfactory means of protecting I-80, portions of the highway may be raised six feet at a cost significantly higher than its replacement cost. Likewise, the northern causeway to Antelope Island may have to be raised to insure motor vehicle access to the park at lake levels above 4204 feet.

Approximately one-half the total capital damage at 4212 feet will be sustained by the lakeside industries. Four companies are expected to cease operations at lake levels in the range of 4207 to 4210 feet. Domtar Industries and Lake Crystal Salt are likely to close down at 4207 feet, representing capital losses of $4 million and $650,000 respectively. Great Salt Lake Minerals indicates it may be wiped out at 4208 feet resulting in a capital loss of $70 million, and American Salt will be forced to shut down at 4210 feet representing a capital loss of $25 million.[2]

Damage to roads and highways could be as high as $43.2 million if both I-80 and the northern causeway to Antelope Island have to be raised. However, if diking adequately protects I-80 and the causeway is simply repaired at its present level, the damage figure totals only $6.4 million.[3] Other roads which are affected by the rising lake include the southern causeway to Antelope Island, the beach road along the south shore, roads on Stansbury Island, a section of old US-40, and the road leading to Bear River Migratory Bird Refuge. Replacement costs were used to assess the damage to these roads in the absence of definitive plans about whether or not they will be protected, raised, replaced, or abandoned.

The rising lake has forced the railroads to make extensive expenditures to protect their investments. The Southern Pacific Transportation Company is in the process of raising its causeway which stretches 13 miles across the lake. Their track beds will be elevated to 4214 feet, high enough to protect operations at lake levels of up to 4210 feet. Should the lake rise above 4210, Southern Pacific intends to spend an additional $16 million to further raise the tracks. The Union Pacific-Western Pacific line runs along the

[2]When Great Salt Lake Mineral Corporation was surveyed for the purpose of this study, company officials reported the firm would likely close operations if the lake were to rise to 4208 feet. Damages and costs as they appear in Tables 1-4 were prepared based on a wipe-out of Great Salt Lake Minerals at 4208 feet. More recently, however, company officials have suggested they may raise the dikes surrounding their ponds to accommodate a lake level of 4208 feet.

[3]The $6.4 million damage figure is based on a preliminary estimate of $500,000 to dike I-80. Since research for this project was completed, a contract for $1.4 million was awarded to W. W. Clyde Construction Company to construct dikes along both sides of I-80.

southern shore of Great Salt Lake. In 1983, the company has spent $2.7 million to raise the berm and track bed and is prepared to spend $500,000 more for each additional one-foot rise of the lake.

Among the waterfowl management areas impacted by a high lake level are 79,000 acres managed by the Division of Wildlife Resources, the 65,000-acre federally controlled Bear River Refuge, 40,000 acres of marshlands owned by private gun clubs. Damages to capital improvements, i.e., dikes, culverts, risers, roads, bridges, fencing, buildings, etc., are estimated to amount to $38.7 million at 4212 feet.

Substantial capital investments were made last summer to protect recreational facilities along the south shore of the lake; however, as the lake approached 4206 feet, it became clear that far greater measures would be required to preserve the Saltair Park, marina, and Saltair Resort. A contract was awarded in the amount of $880,000 to raise the roads and parking areas to 4209 feet, although full completion of the project is contingent upon the Federal Emergency Management Agency approving additional funding beyond the appropriation of $435,000 from the Division of State Parks and Recreation. Additional expenses will likely be incurred also in the restoration and raising of the breakwater. FEMA has already approved funding up to $73,000 to repair the breakwater; however, the costs of raising the level of the breakwater will have to be borne by the state. If the lake rises beyond 4209 feet, the accumulated capital losses to recreational facilities along the south shore and at Antelope Island may reach as high as $7.7 million.

Only two public utilities, Mountain Bell and Mountain Fuel, anticipate capital damage at lake levels of 4202 to 4212 feet. Damage would be to facilities along the south and east shore line of the lake and would total $1 million at 4212 feet.

Damage to several other public facilities would be minor and in the form of flood control measures. Salt Lake City International Airport, and the North and South Davis Sewer Plants would construct dikes and pump at lake elevations between 4208 and 4212 feet. A sewage treatment plant, helicopter pad, and firefighting facilities would sustain damage at Little Mountain Air Base.

Revenue Losses

Flooding, poor weather, and decreased salinity seriously cut into the revenues of lakeside industries in 1983 and the industries anticipate a $7 million reduction in revenues. A $587,000 earnings loss for park concessions for 1983 has been attributed to flooded conditions at the south shore. Owners of pasture land bordering the lake and the tourist industry are other industry segments which may suffer revenue losses as the lake rises. At 4212 feet, reductions in revenue to private firms would amount to $52.5 million annually, of which $50.5 million are losses to mineral companies (Table 2).

Table 2
Annual Revenue Reductions of Private Firms as a Function of the Level of Great Salt Lake
(thousands of dollars)

Lake Elevation	Lakeside Industries	Great Salt Lake Park Concessions	Tourist Industry[a]	Agriculture[b]	Cumulative Total	Incremental Annual Revenue Reductions
4202						
4203						
4204						
4205	7,050	587	14		7,651	7,651
4206	18,300	587	43		18,930	11,279
4207	27,260	587	79		27,926	8,996
4208	42,460	987	124		43,571	15,645
4209	42,460	1,291	165		43,916	345
4210	50,460	1,291	199		51,950	8,034
4211	50,460	1,291	219		51,970	20
4212	50,460	1,291	224	528	52,503	533

[a]Includes facilities which serve tourists, i.e., restaurants, hotels, campgrounds, food stores, gas stations, retail stores, etc.

[b]Although agricultural losses may occur at lake levels below 4212 feet sufficient data were not available to determine the value of those losses.

Source: Bureau of Economic and Business Research, University of Utah, October 1983.

The amount of revenue which private firms stand to lose at particular lake levels is difficult to determine precisely, because factors aside from flooding influence earnings. Production of mineral companies is affected by the brine concentration, weather patterns, and market conditions, as well as flooding. In 1983 the revenue of several mineral firms declined due to decreased salinity of the lake and the relatively cool and wet weather during the summer which inhibited evaporation. Weather patterns, mineral prices, and the relationship of the rising lake to brine concentration and revenue are difficult, if not impossible to predict; thus, estimations of revenue reductions for mineral firms in the event of a wipe-out were based on the average of their revenues in 1981 and 1982. The greatest losses by far would be registered by Great Salt Lake Minerals which would forfeit $39 million annually if it were to cease operation at a lake level of 4208 feet. Domtar and Lake Crystal Salt together would lose $3.5 million annually at 4207 and American Salt's losses would amount to $8 million annually at 4210 feet. Only Domtar and Great Salt Lake Minerals were able to project revenue losses at lake levels below their wipe-out levels; however, it is likely that the decreased salinity of the lake at high elevations will reduce revenues of other mineral firms before they reach the wipe-out stage.

The revenue outlook for other private firms affected by the lake's level is similarly difficult to predict due to other intervening variables. The business of concessions at Great Salt Lake State Park is subject to the number and expenditures of tourists and the demand for recreational services. The flooding of the lake has stalled the development of Saltair Resort; therefore, its potential earnings when completed is unknown. Based on the present stage of development of Saltair Resort, it is estimated the Resort and the Saltair Marina together would lose $1.3 million annually if they ceased operations.

The tourist industry, which consists of all firms which serve tourists, may suffer a loss of revenue if the closure of waterfowl management areas discourages out-of-state hunters, bird watchers and photographers from visiting Utah or shortens their length of stay. If, however, they visit other sites in the state, net revenue of the tourist industry may be unchanged. The closure of Great Salt Lake Parks is not expected to have an adverse effect on the tourist industry other than to the park concessions. The average visit to the parks is shorter than one and one-half hours; whereas, a visit of four to five hours duration is generally required before a tourist will extend his length of stay in the state by an additional day.

Revenue losses in the study are expressed in terms of annual losses at lake levels varying from 4202 to 4212 feet. Revenue losses have not been capitalized; that is, the present value of the entire stream of revenue losses has not been calculated, because the duration of annual losses is unknown. The decision to reinstate mineral firms will depend on future mineral prices and assurance from the state that the lake's level will be controlled. Resumption of business at Saltair marina will be tied to the restoration of the beach road by the State Division of Parks and Recreation and an adequate breakwater. The duration of flooding will affect the extent to which the vegetation is destroyed in waterfowl management areas and pasture lands, and the degree of damage to plant growth will determine the period of time necessary to restore these areas to their original condition.

Household Income Losses

The rising lake has already forced the closure of Great Salt Lake State Park at Antelope Island and flooding will eventually shut down the park along the south shore, park concessions, lakeside industries, and waterfowl management areas at various lake levels between 4206 and 4212 feet. As these facilities cease operations, individuals employed at the parks, firms, and waterfowl management areas will lose their jobs and income. Utah suppliers to these facilities will lose revenue resulting in lower profits to owners and possible job layoffs. Furthermore, the reduced buying power of unemployed individuals may ultimately lead to additional reductions in profits and losses of jobs in other sectors of the Utah economy. These direct, indirect, and induced losses to household income are estimated in the study for lake elevations between 4202 and 4212 feet.

Reductions in household income at a lake elevation of 4205 feet amount to $2.1 million, based on known job layoffs at lakeside industries this year and the assumption that staff reductions will be made at the Division of State Parks and Recreation as a result of the closure of Antelope Island State Park. Household income losses spurred by flooding of waterfowl management areas are assumed to follow a similar trend as to their capital damages. Significant decreases in household income occur at lake levels of 4207 ($2.2 million), 4208 ($18.8 million), and 4210 feet ($2.9 million), when various mineral industries close their doors (Table 3). An estimated 73 percent of the total household income reductions at 4212 feet (27.6 million) is attributed to the wipe-out of Great Salt Lake Minerals.

Table 3
Annual Household Income Losses as a Function of the Level of Great Salt Lake[a] (thousands of dollars)

Lake Elevation	Lakeside Industries	Recreation Areas	Waterfowl Management Areas	Cumulative Total	Incremental Losses
4202					
4203					
4204					
4205	1,742	248	71	2,061	2,061
4206	1,742	248	213	2,203	142
4207	3,801	248	389	4,438	2,235
4208	22,123	552	611	23,286	18,848
4209	22,123	686	810	23,619	333
4210	25,819	686	978	27,483	3,864
4211	25,819	686	1,074	27,579	96
4212	25,819	686	1,100	27,605	26

[a]Includes direct, indirect, and induced household income reductions.

Source: Bureau of Economic and Business Research, University of Utah, October 1983.

State and Local Tax Reductions

Reductions in revenue to firms and income to households inevitably lead to diminished tax revenues to state and local governments. With the lake at 4205 feet, the associated state and local tax losses are estimated to be $550,000 in 1983. The tax losses are predicted to escalate to $3.7 million annually at a lake level of 4208 if Great Salt Lake Minerals ceases operations, and to $4.2 million annually at 4212 feet (Table 4).

To determine the manner in which tax payments by lakeside industries may be affected by higher lake levels, the firms were surveyed about royalties, franchise taxes, property taxes, and sales taxes paid in recent years. Reductions in direct tax payments by lakeside industries range from $155,000 annually at 4205 feet to $1.8 million annually at 4210 feet.

The household income losses generated by job layoffs at mineral companies will in turn result in reduced tax payments by households of $122,000 at 4205 feet and $1.8 million at 4210 feet. Collections of state personal income tax, state and local sales tax, and some miscellaneous taxes are expected to be affected by the household income losses.

Job layoffs at state parks, park concessions, and waterfowl management areas will similarly result in fewer tax payments by households. Other sources of tax revenue impacted by the rising lake are the state's share of concession revenue, entrance and camping fees at state parks, small game permits, and taxes paid by tourists.

Table 4
Annual Reductions in State and Local Tax Revenues as a Function of the Level of Great Salt Lake (thousands of dollars)

	Annual State and Local Tax Revenue Reductions	
Lake Elevation	Cumulative Total	Incremental Annual Tax Reductions
4202		
4203		
4204		
4205	530	530
4206	651	121
4207	1,105	454
4208	3,661	2,556
4209	3,742	81
4210	4,150	408
4211	4,175	25
4212	4,183	8

Source: Bureau of Economic and Business Research, University of Utah, October 1983.

Conclusion

The Utah Division of Water Resources has commissioned several research studies which have investigated alternative methods of lake level control. Three proposals which merit serious consideration based upon the feasibility of their effectively lowering the lake's level are: Breaching the Southern Pacific causeway, pumping lake water to the western desert, and constructing a series of dams along the Bear River. Although any one of these schemes would lower the lake's elevation, many other factors need to be considered before a decision is made to implement a lake management project.

The problem of whether or not the state should invest in a lake level control project and the selection of a particular plan is an extraordinarily complex one, involving consideration of the probabilities of various lake levels in the future, costs of the projects, time frames for their completion, and the amount of damage which might be alleviated.

Of these four factors, the costs of the projects are most certain. There are some questions as to when the projects could be completed. The causeway breach may or may not be completed before the lake peaks next spring; and pumping to the western desert may be delayed by lengthy environmental assessments, or ultimately prohibited by the U.S. Air Force which utilizes the area for weapons testing.

Future levels of the lake are generally unknown. The lake's elevation is a function of weather patterns, and since even a five-day weather forecast by the U.S. Weather Service is accurate only 50 percent of the time, the reliability of any longer term forecast is extremely questionable. The Water Research Laboratory of Utah State University has attempted to minimize the uncertainty of future lake levels by assigning probabilities to various lake levels based upon the current level, the volume of water upstream, and historical lake levels since 1843.[4]

Added to these variables is the difficulty involved in determining the amount of damage which might be prevented by lowering the lake a given amount. The damage figures compiled for this study were obtained by surveying firms and other activities affected by the rising lake. The figures represent their best estimates of the damages and costs they will likely bear as the lake rises. These projections of damage may very well vary from the actual level of damages and costs for a number of reasons.

First, the capital damages at any given level generally represent the maximum amount of damage at that level. It is presumed that if the lake were to flood buildings, dikes, roads, etc., those facilities at or below the lake's level would be completely destroyed and operations cease until the facilities were restored. This may not be the case, however, especially if the duration of flooding were very short. The point to be emphasized is that the extent of damages to buildings and other structures is not only a function of lake level, but also the duration of flooding.

Second, as firms and other facilities gain actual experience with the rising lake, they alter their flood prevention plans. For example, the diking plans for I-80 have changed in the past few months as the lake unexpectedly continued to rise.

Further complicating the issue is the Utah Legislature's stance on lake level control. Future investments in flood control measures by private firms will be dependent on the action the Legislature takes. If companies are assured that the state will enact a lake management plan which will control the lake's level in the long term, they will be more apt to make investments to protect their operations in the short term.

The study of the economic impacts of the rising lake clearly demonstrates that the Great Salt Lake is an important asset to the Utah economy. The potential income to be derived from the lake is sufficiently large to warrant serious consideration of plans to control or at least provide improved management of lake levels.

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[4]Doug James, David Bowles, Paul Riley, and George Chadwick, "Updating the Estimation of Water Surface Elevation Probabilities and Associated Damages for the Great Salt Lake, Summary Report," Utah Water Research Laboratory, Utah State University, due January 1984.

Utah Business Statistics

STATEWIDE STATISTICAL DATA

	July 1984	June 1984	July 1983	% Change From Year Ago	12 Month Average July 1983	12 Month Average July 1982	% Chg.
Agriculture							
Cash Receipts from Farm Marketing (thous. of dol.)	65,380	64,138	56,900	23.0	67,658	65,525.7	3.7
Livestock and Livestock Products (thous. of dol.)	39,609	38,666	26,176	51.3	36,481.6	33,721.4	7.7
Crops (thous. of dol.)	13,771	13,734	10,726	47.0	11,326.3	11,804.3	-4.0
Avg. Prices Rec'd by Farmers (15th of each mo.)(dol.):							
Beef Steers and Heifers (cwt)(thou.)	56.6	57.8	56.1	+1.3	57.0	57.1	-0.1
Lambs (cwt)	47.9	51.6	50.6	-5.3	51.0	51.5	-1.0
Milk, Wholesale (cwt)	12.3	12.5	12.2	0.8	12.4	13.0	-0.7
Alfalfa Hay, Baled (per ton)	81.0	81.0	66.0	22.7	72.0	63.2	17.0
Livestock Slaughtered (live weight):			July-Sept. '82				
Cattle (thous. of lbs)	21,263	23,870	(60,527.6)	na	na	na	na
Sheep and Lambs (thous. of lbs.)	237	320	(626.4)	na	na	na	na
Hogs and Pigs (thous. of lbs.)	3,742	3,204	(10,137.3)	na	na	na	na
Finance							
Loans, Total, Utah Member Banks (mil. of dol.)[a]	3,975	5,034	3,710	7.1	3,955.4	3,531.2	12.0
Investments, Total, Utah Member Banks (mil. of dol.)[a]	1,024	1,042	994	3.0	1,017.1	974.9	4.3
Deposits, Total, Utah Member Banks (mil. of dol.)[a]	5,061	5,038	4,475	13.1	4,812.9	4,266.8	12.8
Demand Deposits of Banks, Total, Utah (mil. of dol.)[a]	54	58	52	3.8	55.3	60.7	-9.0
Other Demand Deposits, Total, Utah (mil. of dol.)[a]	1,120	1,062	1,037	8.0	1,041.4	1,031.7	0.9
Time Deposits, Total, Utah (mil. of dol.)[b]	1,888	1,919	1,586	14.8	1,778.8	1,524.1	16.6
Savings, Savings and Loan Association (mil. of dol.)[b]	1,809.7	1,756.6	1,681.8	10.2	1,698.7	1,664.5	2.1
New Corporation (no.)	579	518	589	-19.2	504.1	483.3	4.3
Tax Collections by the State of Utah (thous. of dol.)							
Total Tax Collections	22,703.3	69,492.1	26,832.9	-14.5	87,180.6	85,372.3	2.1
Sales & Use Tax	5,334.4	5,520.0	7,097.7	-26.4	32,356.4	32,122.9	0.4
Motor Fuel Tax	2,811.8	2,656.0	4,272.8	-46.7	5,519.6	5,738.0	-3.8
Individual Income Tax	9,048.0	33,614.4	9,157.1	-1.2	28,808.1	27,326.5	5.4
Corporation Franchise Tax	685.4	1,879.3	549.2	24.8	2,666.2	3,373.2	-21.6
Employment							
Civilian Labor Force (thous.)	656.7	661.3	651.2	0.5	630.0	636.2	2.2
Total Employed Persons	601.9	609.2	597.1	0.8	595.2	593.8	0.2
Unemployed	54.3	60.3	54.1	+1.2	34.9	42.4	29.4
Percent Total Labor Force	8.3	9.1	8.6	-3.5	8.5	6.7	26.5
Employees on Nonagricultural Payrolls (thous. of jobs)	558.9	562.0	557.1	0.3	559.4	561.9	-0.5
Manufacturing	85.4	85.3	86.2	-0.9	84.3	88.6	-4.6
Mining	14.1	14.1	17.6	-19.9	15.8	20.3	-22.1
Contract Construction	28.2	28.5	28.9	-2.0	26.8	27.4	-2.3
Transportation, Communication and Utilities	35.9	35.7	36.4	-2.4	35.8	35.0	2.2
Wholesale Trade	33.4	33.6	34.5	-3.2	34.0	35.1	-3.1
Retail Trade	98.6	98.7	98.2	1.4	97.2	96.9	0.3
Finance, Insurance and Real Estate	27.3	27.3	26.5	3.0	27.1	26.4	2.5
Services[c]	131.1	130.6	128.2	2.7	130.9	106.6	4.1
Federal Government[d]	37.3	37.5	37.9	-1.6	37.2	37.3	-0.4
State Government[d]	31.7	43.8	30.8	2.9	33.1	32.7	2.4
Local Government[d]	54.7	56.5	52.4	4.4	56.5	55.4	2.0
Average Weekly Hours							
Manufacturing	38.0	39.1	38.8	0.5	38.4	39.4	-2.5
Mining	39.7	41.6	36.7	8.2	41.6	41.9	-0.8
Contract Construction	38.3	38.1	35.7	7.3	37.3	36.9	1.1
Wholesale Trade	37.5	36.2	36.9	1.6	36.5	36.9	-1.2
Retail Trade	29.5	29.3	29.1	1.4	28.3	28.2	0.5
Amount of Unemployment Comp. (thous. of dol.)	6,581.6	8,781.4	8,492.5	-14.1	11,095.9	8,987.4	23.5
Construction							
Total Construction (thous. of dol.)	156,300	168,000	91,400	71.2	478,224.9	83,833.3	470.4
Residential	75,200	78,900	58,600	54.7	112,426.2	37,101.1	203.0
Nonresidential	40,800	42,900	21,700	88.0	40,899.9	32,716.5	25.0
Public Works and Utilities	40,600	47,200	21,100	92.4	378,425.4	14,358.7	4,427.3
Total Permit Construction (thous. of dol.)[e]	111,555.5	111,372.3	55,020.0	98.2	84,762.8	78,632.2	7.8
Residential	63,602.6	81,993.3	29,694.9	114.2	36,865.7	23,333.7	58.0
Nonresidential	36,685.4	22,289.2	14,191.6	158.5	30,876.6	35,526.0	-13.1
Additions, Alterations and Repairs	13,268.1	9,090.8	13,133.5	1.0	10,592.7	13,212.4	-19.8
New Dwelling Units (no.)	1,209	2,112	656	84.3	971.2	630.9	53.9
Tourism/Travel							
Air Passengers (total no. on and off)	659,631	635,990	54 ,412	21.4	590,980.9	386,834	52.8
Highway Traffic Count Across State Lines	50,613	52,896	na	na	na	na	na
Transient Room Taxes (thous. of dol.)	4.2	115.3	59.6	-93.0	-4.6	na	na
Visits, State, Nat'l. Parks, Monuments (thous.)	2,142.6	1,752.1	2,386.3	-10.2	952.8	1,050.4	-9.3
General							
New Cars and Truck Sales	na	na	2,676	na	na	4,589.7	na
C.P.I. (National Index -- 1967 = 100)	299.3	298.1	292.2	2.4	294.6	283.4	3.9
Telephones owned by Mt. Bell (non-Residential)	70,322	70,729	76,320[3]	-7.9	73,566.5	76,950.9	-4.4
Telephones owned by Mt. Bell (Residential)	351,349	357,525	424,124	-17.2	404,497.8	429,873.1	-5.9
Electric Customers (Commercial)	38,061	45,344	38,010	0.1	38,254.8	37,598.1	1.7
Electric Customers (Residential)	402,778	411,845	398,851	1.0	403,324.9	396,889.7	1.6
Natural Gas Customers (Residential & Commercial)	397,614	398,907	385,225	3.2	388,152.0	388,872.1	2.4
Natural Gas Customers (Industrial)	545	546	522	4.4	544.5	544.8	-0.1
Production							
Net Electric Power Utilized (mil. of kwh)	1,164.5	1,076.5	1,052.8	10.6	1,050.1	1,043.2	0.7
Crude Oil to Refineries (thous. of bbls.)	4,548.7	4,227.0	4,564.7	-0.4	4,102.4	4,054.7	1.2
Crude Oil Production (thous. of bbls.)	2,465.0	2,398.9	1,741.4	41.6	2,129.6	1,968.6	8.2
Natural Gas Production (mil. of cu. ft.)	8,128.1	7,444.1	7,610.0	6.8	7,362.6	7,789.1	-5.5
Coal (thous. short tons)	907	1,192	1,208	-24.9	1,263.0	1,393.6	-9.4
Copper (thous. metric tons)[g]	11,830	13,906	17,391	-32.0	14,621.8	17,286.3	-15.4

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Utah Business Statistics

MULTI-COUNTY PLANNING DISTRICT STATISTICAL DATA	July 1983	June 1983	July 1982	% Change From Year Ago	12 Month Average July 1983	12 Month Average July 1982	% Chg.
Wasatch Front (Salt Lake, Tooele, Davis, Weber, Morgan							
Non-Ag. Employment (thous.)	197.0	197.6	195.2	0.9	195.2	195.8	-0.2
Auth. Permit Construction (Mil. of dol.)	72.8	75.3	29.7	145.1	54.9	44.5	23.4
New Dwelling Units	738	1,666	371	104.3	662.7	299.2	121.5
Postal Receipts (thous.)	6,080.3	5,758.6	5,475.1	11.1	6,321.8	5,974.2	5.8
Electric Customers (Residential)	287,794	285,670	281,372	1.6	285,284.0	281,178.7	1.5
Electric Customers (Commercial)	23,202	23,162	22,825	1.7	22,958.1	22,828.2	0.6
Natural Gas Customers (Residential)	291,305	293,710	282,560	3.8	292,256.5	285,932.9	2.2
Natural Gas Customers (Industrial)	400	401	384	4.2	402.1	400.0	0.5
Salt Lake City							
Non-Ag. Employment (Salt Lake and Tooele)(thous.)	300.4	300.1	299.1	0.4	298.6	299.5	-0.3
Auth. Permit Construction (mil. of dol.)	19.0	4.5	8.1	134.8	11.2	12.3	-8.8
New Dwelling Units	10	19	7	42.9	20.3	21.3	-4.9
Postal Receipts (thous.)	5,023.1	4,708.2	4,468.3	12.5	5,162.4	4,840.0	6.7
Natural Gas Customers (Residential)	58,660	57,149	56,906	+0.1	57,203.5	55,798.1	2.5
Natural Gas Customers (Industrial)	140	141	142	-1.4	141.2	146.8	-3.8
Telephones owned by Mt. Bell (non-Residential)[1,2]	36,669	36,844	39,876	-8.1	38,127.8	40,664.5	-5.8
Telephones owned by Mt. Bell (Residential)[1,2]	180,334	181,681	216,453	-16.7	205,436.1	217,049.8	-5.8
Ogden							
Non-Ag. Employment (Weber, Morgan, Davis)(thous.)	96.6	97.2	96.0	0.6	96.6	96.1	0.5
Auth. Permit Construction (mil. of dol.)	1.8	2.0	1.1	63.6	1.9	1.8	3.2
New Dwelling Units	13	19	2	550.0	15.0	13.2	13.8
Postal Receipts	415.7	438.3	408.3	1.8	461.2	450.3	2.4
Natural Gas Customers (Residential)	22,880	22,649	22,609	1.6	22,447.2	22,267.3	0.8
Natural Gas Customers (Industrial)	51	51	47	8.5	51.0	50.4	1.3
Telephones owned by Mt. Bell (non-Residential)[1,2]	6,466	6,491	6,810	-5.1	6,768.4	7,085.2	-4.5
Telephones owned by Mt. Bell (Residential)[1,2]	34,883	35,366	43,539	-19.8	40,443.2	43,678.0	-7.4
Mountainlands (Utah, Wasatch, Summit Counties)							
Non-Ag. Employment (thous.)	69.1	70.2	68.5	1.1	71.8	71.3	0.7
Auth. Permit Construction (mil. of dol.)	20.0	12.2	14.6	37.0	15.1	15.0	-18.3
New Dwelling Units	261	181	83	214.4	121.0	132.6	-8.8
Postal Receipts (thous.)	8.2	14.1	12.2	-4.3	779.6	763.0	2.2
Electric Customers (Residential)	57,027	57,200	57,599	-1.6	54,841.6	55,090.3	-0.5
Electric Customers (Commercial)	5,819	5,805	5,668	+9.0	6,074.8	6,035.9	0.6
Natural Gas Customers (Residential)	62,733	62,481	61,530	1.9	63,143.1	61,760.4	2.2
Natural Gas Customers (Industrial)	78	78	76	2.6	76.9	79.9	-4.0
Provo							
Non-Ag. Employment (thous.)(Utah Co.)	63.3	63.4	61.8	1.3	64.6	64.1	0.7
Auth. Permit Construction (mil. of dol.)	2.4	2.0	6.3	-61.9	3.2	4.8	-33.9
New Dwelling Units	80	37	7	650.0	34.6	44.2	-21.8
Postal Receipts (thous.)	183.9	300.1	237.8	-17.3	426.6	429.2	-0.6
Natural Gas Customers (Residential)	16,072	16,041	15,943	0.8	16,825.9	16,058.8	4.8
Natural Gas Customers (Industrial)	31	30	33	-6.1	33.2	34.2	-2.8
Telephones owned by Mt. Bell (non-Residential)[1,2]	5,780	5,840	6,457	-10.8	6,187.2	6,492.5	-4.7
Telephones owned by Mt. Bell (Residential)[1,2]	29,732	30,315	37,201	-20.1	35,962.2	39,425.4	-8.8
Central Utah (Juab, Millard, Sanpete, Sevier, Piute, Wayne)							
Non-Ag. Employment (thous.)	12.8	12.7	12.8	0.0	12.6	12.7	-0.8
Auth. Permit Construction (mil. of dol.)	1.6	2.1	1.6	0.0	2.1	1.7	23.5
New Dwelling Units	15	20	44	-65.9	25.0	26.2	-4.6
Postal Receipts (thous.)	82.8	71.3	74.2	11.6	80.2	88.3	-9.2
Electric Customers (Residential)	9,732	9,756	9,637	1.0	9,695.2	9,478.8	2.3
Electric Customers (Commercial)	1,842	1,859	1,845	-0.2	1,838.5	1,800.0	2.1
Uintah Basin (Duchesne, Daggett, Uintah Counties)							
Non-Ag. Employment (thous.)	12.8	12.5	13.2	-3.0	12.5	13.2	-5.6
Auth. Permit Constr tion (mil. of dol.)	1.0	2.4	4.5	-77.8	3.3	5.7	-42.0
New Dwelling Units	14	24	66	-78.8	16.9	77.3	-78.2
Postal Receipts (thous.)	96.6	92.9	100.7	-4.1	109.4	99.7	9.7
Electric Customers (Residential)	6,267	6,286	5,892	6.4	6,212.3	5,634.3	10.3
Electric Customers (Commercial)	958	954	843	13.6	927.8	803.5	15.5
Natural Gas Customers (Residential)	5,405	5,602	5,371	0.6	5,284.3	5,053.5	4.6
Natural Gas Customers (Industrial)	5	5	5	0.0	4.5	4.6	-2.2
Bear River (Box Elder, Cache, Rich Counties)							
Non-Ag. Employment (thous.)	31.7	32.5	31.4	1.0	32.0	32.1	-0.2
Auth. Permit Construction (mil. of dol.)	7.4	7.5	2.6	184.6	4.2	3.2	31.3
New Dwelling Units	44	157	23	91.3	61.3	29.6	106.9
Postal Receipts (thous.)	251.0	250.0	261.9	-4.2	276.6	278.9	-0.8
Electric Customers (Residential)	24,299	24,340	24,282	0.1	24,426.8	25,119.5	-2.8
Electric Customers (Commercial)	3,015	2,996	2,945	2.4	2,982.7	3,099.2	-3.8
Natural Gas Customers (Residential)	26,121	26,421	25,672	1.7	25,179.7	24,698.5	1.9
Natural Gas Customers (Industrial)	47	47	44	6.8	41.9	41.2	1.6
Southeastern (Carbon, Emery, Grand, San Juan Counties)							
Non-Ag. Employment (thous.)	19.3	20.2	20.3	-4.9	19.7	21.1	-6.6
Auth. Permit Construction (mil. of dol.)	5.6	2.1	1.5	273.3	2.7	3.0	-8.6
New Dwelling Units	48	19	27	77.8	32.8	8.7	14.1
Postal Receipts (thous.)	70.7	70.3	74.7	-5.4	82.7	na	na
Electric Customers (Residential)[g]	11,469	12,510	11,734	-2.3	11,750.5	11,556.3	1.7
Electric Customers (Commercial)[g]	1,497	1,493	1,490	0.5	1,481.5	1,465.1	1.1
Natural Gas Customers (Residential)	10,048	10,193	10,022	0.3	10,350.0	9,963.0	3.9
Natural Gas Customers (Industrial)	15	15	13	15.4	15.5	14.8	4.5
Southwestern (Beaver, Iron, Washington, Garfield, Kane Counties)							
Non-Ag. Employment (thous.)	16.1	16.2	16.0	0.6	15.7	15.7	0.1
Auth. Permit Construction (mil. of dol.)	5.1	6.0	2.6	96.2	4.4	3.8	16.0
New Dwelling Units	69	65	40	72.5	64.2	43.9	46.3
Postal Receipts (thous.)	150.6	127.2	129.8	16.0	139.0	136.2	2.1
Electric Customers (Residential)	11,190	11,077	11,092	0.9	11,127.4	8,844.3	25.8
Electric Customers (Commercial)	2,028	2,007	1,997	1.6	1,992.6	1,566.7	27.2

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Utah Business Statistics

STATEWIDE STATISTICAL DATA

	Aug. 1983	July 1983	Aug. 1982	% Change From Year Ago	12 Month Average Aug. 1983	12 Month Average Aug. 1982	% Chg
Agriculture							
Cash Receipts from Farm Marketing (thous. of dol.)	42,817	45,389	36,083	18.7	48,320.8	44,413.2	8.6
Livestock and Livestock Products (thous. of dol.)	33,746	29,609	25,278	33.5	37,037.3	32,746.1	13.1
Crops (thous. of dol.)	11,767	15,221	10,785	8.9	11,406.1	11,667.0	-2.2
Avg. Prices Rec'd by Farmers (15th of each mo.)(dol.):							
Beef Steers and Heifers (cwt)(thou.)	52.3	53.9	59.3	-11.8	56.4	57.7	-2.2
Lambs (cwt)	45.8	47.9	48.7	-10.1	50.6	50.6	0.0
Milk, Wholesale (cwt)	12.3	12.3	12.5	0.0	12.9	13.0	-0.8
Alfalfa Hay, Baled (per ton)	81.0	81.0	78.0	3.8	74.5	64.2	16.5
Livestock Slaughtered (live weight):			July-Sept '82				
Cattle (thous. of lbs)	25,062	27,263	(60,327.4)	na	na	na	na
Sheep and Lambs (thous. of lbs.)	226	212	(468.6)	na	na	na	na
Hogs and Pigs (thous. of lbs.)	4,003	3,742	(10,167.3)	na	na	na	na
Finance							
Loans, Total, Utah Member Banks (mil. of dol.)[a]	4,282	4,273	3,860	8.9	3,981.4	3,568.1	11.7
Investments, Total, Utah Member Banks (mil. of dol.)[a]	1,037	1,025	1,001	3.1	1,019.2	980.0	4.0
Deposits, Total, Utah Member Banks (mil. of dol.)[a]	5,085	5,061	4,516	12.6	4,938.2	4,365.8	13.1
Demand Deposits of Banks, Total, Utah (mil. of dol.)[a]	63	56	67	-6.0	56.6	59.0	-4.0
Other Demand Deposits, Total, Utah (mil. of dol.)[b]	1,212	1,120	1,043	16.2	1,066.1	1,043.1	2.2
Time Deposits, Total, Utah (mil. of dol.)[b]	3,910	3,856	3,369	16.1	3,809.9	3,268.9	16.6
Savings, Savings and Loan Association (mil. of dol.)[b]	1,800.9	1,808.3	1,619.0	11.3	1,713.0	1,655.0	3.6
New Corporation (no.)	301	299	307	-2.0	317.9	315.8	-0.7
Tax Collections by the State of Utah (thous. of dol.)							
Total Tax Collections	38,132.6	22,307.3	169,485.2	-10.7	88,896.2	85,669.4	3.8
Sales & Use Tax	91,816.9	5,206.3	84,035.0	9.3	32,904.9	32,175.6	2.3
Motor Fuel Tax	2,276.4	2,811.8	4,447.1	-48.8	5,382.9	7,742.1	-30.5
Individual Income Tax	30,234.4	4,068.0	43,843.6	-31.6	28,133.2	27,132.7	7.5
Corporation Franchise Tax	472.3	687.4	382.3	23.5	2,497.6	3,331.7	-20.4
Employment							
Civilian Labor Force (thous.)	636.1	655.2	639.1	-0.5	644.8	633.6	1.7
Total Employed Persons	605.7	601.9	601.1	0.8	595.0	594.7	0.1
Unemployed	30.4	53.3	38.0	-19.1	54.3	43.8	23.9
Percent Total Labor Force	4.7	8.3	6.8	-32.3	8.4	6.8	23.7
Employees on Nonagricultural Payrolls (thous. of jobs)	559.1	558.9	558.4	0.2	559.5	561.8	-0.4
Manufacturing	86.5	83.6	83.7	0.9	84.6	88.1	-4.0
Mining	14.2	14.1	17.7	-19.2	15.5	20.0	-22.4
Contract Construction	29.7	30.2	30.9	-0.7	26.8	27.3	-1.9
Transportation, Communication and Utilities	34.5	35.0	36.1	-7.5	35.6	35.1	1.4
Wholesale Trade	32.2	33.4	34.4	-6.5	33.9	35.0	-3.1
Retail Trade	89.9	90.6	90.5	-0.6	97.3	97.1	0.2
Finance, Insurance and Real Estate	27.2	27.3	26.8	3.4	27.2	26.4	2.9
Services[c]	111.4	111.1	108.6	2.6	111.1	107.1	3.8
Federal Government	37.1	37.3	37.6	-1.3	37.2	37.3	-0.4
State Government[d]	32.0	31.3	30.2	7.6	33.6	32.8	2.3
Local Government[d]	56.7	56.7	52.6	7.8	56.7	55.4	2.3
Average Weekly Hours							
Manufacturing	40.0	39.0	38.1	5.4	38.5	39.2	-1.8
Mining	42.6	43.7	43.1	-1.2	41.6	42.0	-0.9
Contract Construction	40.0	38.3	37.4	7.0	37.5	36.9	1.7
Wholesale Trade	38.2	37.5	37.3	2.4	36.6	36.9	-0.9
Retail Trade	28.5	29.5	28.4	3.9	28.4	28.1	1.0
Amount of Unemployment Comp. (thous. of dol.)	7,040.3	8,581.6	11,111.6	-36.6	10,756.6	9,470.2	13.6
Construction							
Total Construction (thous. of dol.)	157,200	176,500	127,200	15.7	479,891.6	88,575.0	441.8
Residential	73,800	71,200	36,000	105.0	115,376.2	38,241.7	202.2
Nonresidential	41,800	60,800	57,700	-27.6	39,574.9	35,191.5	12.5
Public Works and Utilities	41,500	40,600	33,500	-6.0	378,258.7	10,958.7	3,351.7
Total Permit Construction (thous. of dol.)[e]	142,187.6	113,355.5	113,561.2	25.2	87,148.3	81,790.4	6.6
Residential	85,233.8	63,602.0	29,947.1	184.7	41,475.0	22,285.4	86.1
Nonresidential	30,347.5	36,685.4	61,605.5	-50.7	29,105.1	38,634.1	-24.7
Additions, Alterations and Repairs	16,586.3	13,268.1	22,014.6	-24.7	10,140.3	14,310.8	-29.1
New Dwelling Units (no.)	2,070	1,209	661	213.2	1,088.6	614.2	77.2
Tourism/Travel							
Air Passengers (total no. on and off)	656,981	659,631	594,020	10.6	596,223.5	403,810.3	47.6
Highway Traffic Count Across State Lines	48,584	50,623	na	na	35,196.7	na	na
Transient Room Taxes (thous. of dol.)[f]	681.8	4.2	728.4	-6.4	5.5	na	na
Visits, State, Nat'l. Parks, Monuments (thous.)	1,850.1	2,142.6	2,035.4	-9.1	937.4	1,049.3	-10.7
General							
New Cars and Truck Sales	na	na	2,976	na	na	4,254.3	na
C.P.I. (National Index -- 1967 = 100)	300.3	299.3	292.8	2.6	295.2	284.8	3.7
Telephones owned by Mt. Bell (Non-Residential)[f]	70,057	70,322	76,464	-8.4	73,032.6	76,863.6	-5.0
Telephones owned by Mt. Bell (Residential)	344,595	351,349	424,607	-18.7	397,880.1	430,223.9	-7.5
Electric Customers (Commercial)	38,908	38,061	37,685	3.2	38,356.7	37,725.0	1.7
Electric Customers (Residential)	401,341	402,778	398,120	0.8	403,593.3	397,805.8	1.5
Natural Gas Customers (Residential & Commercial)	418,591	397,614	389,184	7.0	400,435.9	391,173.9	2.4
Natural Gas Customers (Industrial)	535	545	538	-0.6	544.3	544.8	-0.1
Production							
Net Electric Power Utilized (mil. of Kwh)	1,134.2	1,164.5	1,074.5	5.6	1,055.1	1,034.6	2.0
Crude Oil to Refineries (thous. of bbls.)	4,401.5	4,548.7	4,043.8	8.8	4,132.2	4,003.0	3.2
Crude Oil Production (thous. of bbls.)	2,483.1	2,465.0	2,208.9	12.4	2,152.4	1,980.1	8.7
Natural Gas Production (mil. of cu. ft.)	8,758.1	8,128.1	8,970.4	-0.5	7,359.9	7,814.8	-5.8
Coal (thous. short tons)	1,318	907	1,429	-7.8	1,253.8	1,405.6	-10.8
Copper (thous. metric tons)[g]	14,247	11,830	16,866	-15.5	14,403.6	17,212.1	-16.3

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Utah Business Statistics

MULTI COUNTY PLANNING DISTRICT STATISTICAL DATA	Aug. 1983	July 1983	Aug. 1982	% Change From Year Ago	12 Month Average Aug. 1983	12 Month Average Aug. 1982	% Chg.
Wasatch Front (Salt Lake, Tooele, Davis, Weber, Morgan							
Non-Ag. Employment (thous.)	394.4	397.0	395.2	-0.2	395.1	395.8	-0.2
Auth. Permit Construction (Mil. of dol.)	97.2	72.8	81.4	19.4	56.2	48.5	15.9
New Dwelling Units	1,580	758	382	287.4	754.2	306.3	146.2
Postal Receipts (thous.)	5,971.7	6,080.7	5,641.4	5.9	6,349.3	6,040.6	5.1
Electric Customers (Residential)	286,607	285,794	281,772	1.7	285,686.9	281,559.0	1.5
Electric Customers (Commercial)	23,348	23,202	22,637	3.1	23,017.4	22,847.7	0.7
Natural Gas Customers (Residential)	291,669	293,305	286,830	1.7	292,659.8	287,970.6	0.9
Natural Gas Customers (Industrial)	391	400	396	-1.3	401.7	399.8	0.5
Salt Lake City							
Non-Ag. Employment (Salt Lake and Tooele)(thous.)	297.9	300.4	299.0	-0.4	298.5	299.6	-0.4
Auth. Permit Construction (mil. of dol.)	18.1	19.0	37.8	-52.1	9.6	15.2	-37.1
New Dwelling Units	8	10	6	33.3	20.5	21.7	-5.7
Postal Receipts (thous.)	4,941.0	5,025.1	4,621.1	6.9	5,189.1	4,893.6	6.0
Natural Gas Customers (Residential)	56,793	56,869	56,494	0.4	57,186.8	57,204.9	-0.0
Natural Gas Customers (Industrial)	139	140	142	-2.1	141.0	146.4	-3.7
Telephones owned by Mt. Bell (non-Residential)[f,i]	36,555	36,649	39,938	-8.5	38,040.9	40,535.5	-6.2
Telephones owned by Mt. Bell (Residential)[f,i]	177,257	180,554	217,058	-18.3	201,139.4	217,226.6	-7.4
Ogden							
Non-Ag. Employment (Weber, Morgan, Davis)(thous.)	96.5	96.5	96.2	0.3	96.6	96.2	0.4
Auth. Permit Construction (mil. of dol.)	4.0	3.8	1.8	122.2	2.1	1.6	30.2
New Dwelling Units	3	11	10	-70.0	14.4	12.3	17.2
Postal Receipts	426.3	417.7	410.3	3.9	462.5	455.5	1.5
Natural Gas Customers (Residential)	22,179	22,380	21,992	0.9	22,462.8	22,285.4	0.8
Natural Gas Customers (Industrial)	48	51	51	-5.9	50.8	50.3	0.9
Telephones owned by Mt. Bell (non-Residential)[f,i]	6,625	6,466	7,034	-8.7	6,717.7	7,085.0	-5.2
Telephones owned by Mt. Bell (Residential)[f,i]	34,254	34,885	43,506	-21.3	39,672.2	43,684.7	-9.2
Mountainlands (Utah, Wasatch, Summit Counties)							
Non-Ag. Employment (thous.)	69.4	69.1	68.7	1.0	71.9	71.3	0.8
Auth. Permit Construction (mil. of dol.)	28.4	20.0	8.9	219.1	13.9	13.9	0.2
New Dwelling Units	379	261	79	379.7	146.0	117.5	24.3
Postal Receipts (thous.)	740.9	718.7	799.2	-7.3	774.7	777.8	-0.4
Electric Customers (Residential)	52,923	54,027	53,566	-1.8	54,762.9	54,868.5	-0.2
Electric Customers (Commercial)	6,285	5,519	5,901	6.5	6,106.8	6,008.8	1.6
Natural Gas Customers (Residential)	62,814	63,715	61,442	2.2	63,259.2	61,865.5	2.3
Natural Gas Customers (Industrial)	77	78	77	0.0	76.7	79.9	-4.0
Provo							
Non-Ag. Employment (thous.)(Utah Co.)	62.9	62.5	62.3	1.0	64.7	64.2	0.7
Auth. Permit Construction (mil. of dol.)	9.8	2.6	2.2	345.5	3.8	4.7	-18.4
New Dwelling Units	143	30	10	1,330.0	45.7	40.9	11.7
Postal Receipts (thous.)	418.8	383.9	470.6	-11.0	422.3	439.2	-3.9
Natural Gas Customers (Residential)	16,129	16,072	16,013	2.0	16,852.2	16,077.8	4.8
Natural Gas Customers (Industrial)	30	31	33	-9.1	33.0	34.0	-3.1
Telephones owned by Mt. Bell (non-Residential)[f,i]	5,743	5,780	6,517	-11.9	6,122.7	6,495.9	-5.7
Telephones owned by Mt. Bell (Residential)[f,i]	28,659	29,713	36,770	-22.1	35,286.3	39,404.9	-10.5
Central Utah (Juab, Millard, Sanpete, Sevier, Piute, Wayne)							
Non-Ag. Employment (thous.)	13.0	12.8	13.1	-0.8	12.6	12.7	-0.9
Auth. Permit Construction (mil. of dol.)	2.0	1.6	6.6	-69.7	1.7	2.0	-14.2
New Dwelling Units	16	15	19	-15.8	24.8	24.3	1.9
Postal Receipts (thous.)	82.2	82.8	82.5	-0.4	80.2	88.9	-9.8
Electric Customers (Residential)	9,890	9,732	9,629	2.7	9,717.0	9,503.8	2.2
Electric Customers (Commercial)	1,873	1,862	1,831	2.3	1,842.0	1,806.1	2.0
Uintah Basin (Duchesne, Daggett, Uintah Counties)							
Non-Ag. Employment (thous.)	12.7	12.8	13.2	-3.8	12.5	13.2	-5.6
Auth. Permit Construction (mil. of dol.)	2.3	1.0	6.6	-66.7	2.9	5.4	-45.7
New Dwelling Units	24	24	59	-59.3	14.0	67.8	-79.4
Postal Receipts (thous.)	92.1	96.6	91.8	0.3	109.4	100.5	8.9
Electric Customers (Residential)	6,260	6,267	5,947	5.4	6,239.2	5,675.1	9.9
Electric Customers (Commercial)	965	958	853	13.1	937.1	813.8	15.2
Natural Gas Customers (Residential)	5,407	5,405	5,338	1.3	5,290.1	5,105.3	3.6
Natural Gas Customers (Industrial)	5	5	5	0.0	4.5	4.7	-4.3
Bear River (Box Elder, Cache, Rich Counties)							
Non-Ag. Employment (thous.)	31.7	31.7	31.4	1.0	32.0	32.0	0.1
Auth. Permit Construction (mil. of dol.)	3.1	7.4	2.8	10.7	4.2	3.2	32.0
New Dwelling Units	44	44	63	-30.2	59.7	31.6	89.0
Postal Receipts (thous.)	248.4	251.0	279.8	-11.2	274.0	284.9	-3.8
Electric Customers (Residential)	23,322	24,299	24,371	-4.3	24,339.4	24,994	-2.6
Electric Customers (Commercial)	2,928	3,015	2,966	-1.3	2,979.5	3,077	-3.2
Natural Gas Customers (Residential)	26,176	26,121	25,568	2.4	25,230.4	24,759.1	1.9
Natural Gas Customers (Industrial)	47	47	46	2.2	42.0	41.2	1.9
Southeastern (Carbon, Emery, Grand, San Juan Counties)							
Non-Ag. Employment (thous.)	19.8	19.3	20.9	-5.3	19.6	21.1	-7.1
Auth. Permit Construction (mil. of dol.)	2.3	5.6	2.1	9.5	2.7	2.9	-6.3
New Dwelling Units	17	48	30	-43.3	31.7	29.7	6.8
Postal Receipts (thous.)	78.5	70.7	72.6	8.1	83.2	na	na
Electric Customers (Residential)	11,412	11,469	11,701	-2.5	11,726.4	11,594.0	1.1
Electric Customers (Commercial)	1,491	1,497	1,498	-0.5	1,480.9	1,470.3	0.7
Natural Gas Customers (Residential)	10,525	10,048	10,006	5.2	10,393.3	10,009.7	3.8
Natural Gas Customers (Industrial)	15	15	14	7.1	15.6	14.9	4.6
Southwestern (Beaver, Iron, Washington, Garfield, Kane Counties)							
Non-Ag. Employment (thous.)	15.9	16.1	15.9	0.0	15.7	15.7	0.0
Auth. Permit Construction (mil. of dol.)	7.0	5.1	5.2	34.6	4.6	4.1	11.0
New Dwelling Units	110	69	29	279.3	71.0	43.5	63.1
Postal Receipts (thous.)	104.8	150.6	139.7	-25.0	136.1	137.9	-1.3
Electric Customers (Residential)	11,220	11,190	11,144	0.7	11,133.7	9,624.1	15.7
Electric Customers (Commercial)	2,018	2,028	1,999	1.0	1,994.2	1,701.8	17.2

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Sources and Footnotes

Sources:

Agriculture farm marketings, livestock slaughter, farm prices: U.S. Department of Agriculture
Loans, Investments, Deposits: Federal Reserve reports
Savings, Savings and Loan Association: Utah savings and loan institutions
New Corporations: Utah Secretary of State
Tax Collections: Utah State Tax Commission
Employment Data: Utah Department of Employment Security
Construction: Dodge Construction Statistics and BEBR
Air Passengers: Salt Lake International Airport, statistics service
Traffic Count: Utah Department of Transportation, Travel Analysis Unit
Visits to State and National Parks and Monuments: U.S. Forest Service; Utah State Parks and Recreation Department
Truck and car sales: Utah Automobile Dealers Registrations Service Company
Telephone, electric, natural gas customers: cooperating Utah utility companies
Net electric power utilized: cooperating Utah power companies
Crude oil to refineries: cooperating Utah oil refineries
Copper production: U.S. Bureau of Mines
Coal production: U.S. Department of Energy
Oil and gas production: State of Utah Division of Oil, Gas and Mining

Footnotes:

[a] End of Period, includes member banks of Federal Reserve System
[b] As of the close of business on last day of the month
[c] Includes nonprofit and religious
[d] Includes public schools and colleges
[e] Total new construction plus additions, alterations and repairs
[f] Figures shown do not include telephones bought by businesses and individual customers, and do not include telephones owned by other telephone companies.
[g] Beginning with this issue, the numbers of electric customers have been revised for the state and Southeastern District due to the acquisition of C.P. National customers to UP&L.
[h] Beginning January 1979, data reported in metric tons; to convert metric tons to short tons, multiply by 1.10231
[i] Includes Salt Lake County and Bountiful
[j] Includes Weber and Morgan Counties
[k] Includes Orem and Springville
[P] Preliminary
na Not available.

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Development Potential:

Medical Supply and Biomedical Research Industries in Utah

by Constance C. Skelton, Research Analyst

Introduction

Demands for health care in the United States have been rapidly increasing. On a national level the increase is reflected in the figures below, which represent national health care expenditures as a percentage of Gross National Product.

1955	1960	1965	1970	1975	1980	1981
4.4	5.3	6.0	7.5	7.7	9.5	9.8

Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1982-1983* (Washington, D.C., Government Printing Office).

The rising demand for both the quantity and quality of medical goods and services has produced enormous growth opportunities for the health care industry.

In 1971 the Bureau of Economic and Business Research undertook a study of two segments of this industry: medical/dental supply companies and biomedical research firms. Utah had been a breeding ground for medical supply companies and was a center for biomedical research. The study demonstrated that the Wasatch Front offered many advantages to the expanding medical supply industry and to firms engaged in biomedical research. Some of those advantages were the availability, quality, and cost of labor; suitable transportation services; and the proximity of the University of Utah.[1]

Nearly 12 years have passed since the medical supply/biomedical research target industries study was completed. During that time several of the local medical supply companies have mushroomed in size and have been purchased by major health care companies. Recognition of the University of Utah's research in the fields of artificial organs and bioengineering has continued to spread, and international acclaim was achieved last year, when a permanent artificial heart was implanted in a human being for the first time.

In the interest of furthering the growth of medical supply companies in Utah and hastening the development of a biomedical research center, the State Division of Economic and Industrial Development requested the Bureau of Economic and Business Research to re-examine the requirements of these industry segments and the resources which Utah can provide to meet their needs. The objectives of the

[1] D. James Croft and Marjorie A. Billings, *A Study of Medical/Dental Supply and Biomedical Research and Engineering Potentials on Utah's Wasatch Front*, Bureau of Economic and Business Research, Salt Lake City, 1972.

study were to: (1) Describe the structure and products of the medical supply/biomedical industry, as well as industry trends; (2) Identify critical site selection factors for both mature medical manufacturing firms and biomedical start-up companies; and (3) Assess the advantages and disadvantages that a Wasatch Front location presents to these two types of organizations. This article summarizes the findings of the study.[2]

The Medical Supply and Biomedical Research Industries in the United States

To assess the potential for growth of the medical supply and biomedical research industries, a profile of these industries nationwide was compiled, including a description of industry structure, products and trends, and variables influencing the demand for health care products.

Industry Structure

Particular industry segments as categorized by Standard Industrial Classifications were selected for study. These industry groups are the following:

1. X-ray and electromedical equipment manufacturers (SIC 3693)
2. Surgical and medical instruments manufacturers (SIC 3841)
3. Surgical appliances and supplies manufacturers (SIC 3842)
4. Research firms which combine biological sciences with engineering technologies to solve medical problems (no specific SIC code)

Firms in the latter category are commonly referred to as "biomedical," "biomedical engineering" or "bioengineering" firms, although many of the companies in the three manufacturing classes are also engaged in biomedical or bioengineering research and development. For example; Motion Control, Inc. which is the firm that developed and manufactures the "Utah arm" is coded 3842, surgical appliances and supplies.

According to the 1977 Census of Manufactures, there were more than 2,000 companies in the medical supply industry of which two-thirds had fewer than 20 employees. The manufacturing plants for the majority of these companies are concentrated in the Northeast, North Central region and in California (Table 1).

[2]Constance C. (Wilkinson) Steffen, *The Medical Supply and Biomedical Research Industries*, Bureau of Economic and Business Research, Salt Lake City, 1983.

Table 1
Profile of the Medical Equipment, Instruments, and Supplies Industries

	SIC 3693 X-Ray and Electromedical Equipment	SIC 3841 Surgical and Medical Instruments	SIC 3842 Surgical Appliances and Supplies
Value of Industry Shipments (millions of dollars)	3,113	3,444	4,843
Total Employment	41,000	56,000	64,000
Production Workers	19,000	33,000	45,000
Number of Establishments[a]	243	651	1,154
Number of Establishments with Less Than 20 Employees[a]	117	413	832
Percent of Industry Shipments Accounted for by Four Largest Companies[a]	32	32	38
States Accounting for Largest Percent of Industry Shipments	NY(15%),OH(10%) CA(10%),FL(9%) MA(9%),CT(8%)	CA(10%),NY(9%) MA(9%),NJ(6%) CT (4%),FL(4%)	NJ(10%),IL(10%) CA(9%),PA(7%) NY(5%),CT(3%)

[a]1977 *Census of Manufactures*

Source: U.S. Department of Commerce, Bureau of Industrial Economics, *1983 U.S. Industrial Outlook*, January, 1983 (Washington, D.C.: Government Printing Office).

Products and Trends

The fastest growing medical supply sector in the past decade has been the X-ray and electromedical equipment segment. The value of shipments in 1972 dollars has increased at an annual rate of 10.6 percent and employment has grown 13.1 percent annually (Table 2). The performance of this segment is largely attributed to advances in semi-conductor technology making possible many improved microprocessors that are being incorporated into medical equipment. Products in the electromedical sector include electrocardiographs, heart pacemakers, heart defibrillators, patient monitors, ultrasonic scanners and surgical support systems.

Shipments of the surgical and medical instruments sector have grown at an annual rate of 5.6 percent in the past decade. These products represent the basic diagnostic and therapeutic instruments in general use by the medical profession in private offices as well as in hospitals and clinics, such as surgical hand instruments, hypodermic needles, and blood transfusion equipment. Innovations of these products are generally evolutionary improvements in design rather than totally new devices based on advanced technology.

Products of the surgical appliances and supplies industry cover a wide range — including surgical bandages and dressings, orthopedic braces and supports, hearing aids, and artificial organs. Technological change and product innovations have centered around biocompatible implant materials, and artificial joints, organs, and limbs. Sales in 1972 constant dollars in this sector have increased at an annual rate of 4.1 percent.

Forecast for the Industry

The long term outlook for the medical supply industry is positive according to the Bureau of Industrial Economics (Table 2). Annual sales growth rates through 1987 for the instruments (SIC 3841) and supplies (SIC 3842) sectors should slightly exceed growth rates of the past decade. The prediction for x-ray and electromedical equipment is less optimistic, however, with sales expecting to grow 5.6 percent annually, compared to the previous decade's average of 10.6 percent.

Variables influencing future demand for health care products include interest rates, position of the U.S. dollar relative to foreign currencies, changing demographics, and cost containment measures. Lower interest rates in 1983, as compared to 1982, should improve the climate for capital expenditures. However, a negative variable this year will be the relative strength of the dollar. The x-ray and electromedical equipment industry exported 34 percent of its production in 1982, and that export level will undoubtedly be difficult to maintain in 1983. The instruments (SIC 3841) and supplies (SIC 3842) sectors, which in 1982 exported 18 percent and 9 percent of their products respectively, will be less affected by the strong dollar.

A rising proportion of older people in the U.S. population will stimulate growth in the medical supply industry. According to the Federation of American Hospitals, people over 65 cost more than twice as much to treat.

Voluntary and mandatory controls on hospital costs are expected to have a significant impact on the health care industry. As of October 1, 1983, hospitals will be reimbursed for medicare patients based on a new formula, designed to reward efficient hospitals and penalize those with high costs. Under the old rules, hospitals had little need to trim expenses, since they would nearly always be reimbursed for them. Under the new "diagnosis related groups" (DRG's) plan, hospitals will get a fixed fee depending on the patient's condition, e.g., so much for gallstones, pneumonia, etc., among more than 400 classifications. This plan is already beginning to have an effect on at least one Utah medical supply firm. Becton Dickinson, a manufacturer of blood analyzers costing $150,000 each, has experienced a decline in sales, which Milton Adair, head of Utah operations, attributes to fiscal uncertainty on the part of hospitals.

Group purchasing agreements by multi-hospital systems may apply price pressures on hospital supply manufacturers. According to a *Surgical Business* report, multi-hospital systems represented 41.4

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Table 2
Medical Equipment, Instruments, and Supplies Industries
Trends and Projections
1972 - 1983
(millions of dollars)

	1972	1977	1979	1980	1981[a]	1982[a]	Compound Annual Rate of Growth 1972-1982	1983[b]	Percent[b] Change 1982-1983
X-Ray and Electro-medical Equipment (3693)									
Value of Shipments (1972 $)	444	1,273	1,287	1,210	1,220	1,220	10.6	1,288	5.6
Total Employment	12,000	31,000	36,000	39,000	41,000	41,000	13.1	43,000	4.9
Surgical and Medical Instruments (3841)									
Value of Shipments (1972 $)	962	1,273	1,347	1,494	1,592	1,665	5.6	1,774	6.5
Total Employment	35,000	43,000	50,000	51,000	54,000	56,000	4.8	59,000	5.4
Surgical Appliances and Supplies (3842)									
Value of Shipments (1972 $)	1,454	1,649	1,989	2,006	2,099	2,177	4.1	2,320	6.6
Total Employment	44,000	54,000	59,000	62,000	63,000	64,000	3.8	67,000	4.7

[a]Estimated

[b]Forecast

Source: U.S. Department of Commerce, Bureau of Industrial Economics, *1983 U.S. Industrial Outlook*, January, 1983 (Washington, D.C.: Government Printing Office)

percent of total U.S. hospitals in 1982; and by 1990, 62.3 percent of all hospitals will be affiliated with multi-hospital systems.[3]

Despite uneasiness created by impinging cost control plans, the outlook for particular segments of the industry is very good. High demand is predicted for cost effective medical devices and equipment incorporating advanced technology which either improves the quality of health care or reduces costs.

Medical equipment and instruments which have the effect of limiting the duration of hospital stays are in increasing demand. Technological developments meeting these requirements are implantable drug pumps, portable dialysis units, and electronically controlled I.V. pumps. These are devices which enable patients to receive treatment at home. Surgical staples which reduce time on the operating table, and improved diagnostic instruments which result in quicker and more accurate diagnoses, are also expected to be in demand.

Many of the tests which were done previously in hospitals and labs are now being done in the doctor's office or at home, and this trend is expected to continue. For example, Becton Dickinson has introduced two new diagnostic systems targeted specifically for the doctor's office. Rubascan, a test for rubella, provides results within 10 minutes which is at least 90 percent faster than methods currently in use. The company's other new test is QEA, quick electrolyte analyzer, which provides readings within 30 seconds on patients' potassium and sodium levels. Over-the-counter kits such as those which detect pregnancy, aberrant levels of blood glucose, and moderately high blood pressure reaped an estimated $230 million for their manufacturers in 1981. Dr. Andrew Shoenberg of the Biomedical Test Lab at Research Park, University of Utah, speculates that

3."Medical Instruments and Equipment Sales by Type, Projections to 1985," *Surgical Business* (May, 1982): 29.

someday every mother will have a strep throat kit which will detect the disease within minutes.

Medical Supply and Biomedical Research Industries in Utah

A total of 34 firms employing 4,469 persons are involved in the production of medical supplies or biomedical research in Utah. A listing and production description of these firms appears on page 8. The medical supply industry includes both large manufacturing firms and small specialized companies engaged in batch production. The two largest companies, Deseret Medical Inc. and Sorenson Research Company, each employing more than 1,000 employees, are primarily involved in the mass manufacture of disposable medical supplies. Fifteen of the 29 manufacturing firms produce electronic medical devices, including computerized diagnostic instruments (Becton Dickinson Automated Immunochemistry Systems, Diasonics Cardio-Imaging, Inc.), critical care monitoring machines (Bunnell Biomedical, Inc.), and sophisticated therapeutic equipment such as hyperthermia machines for cancer treatment (BSD Medical Corporation), lasers for surgery (HGM, Inc.), and automated drug delivery devices (Motion Control, Inc.). The size of these firms ranges from 5 to 250 employees. Another three small firms specialize in the relatively new field of immunodiagnostics, producing tests for such diseases as herpes, rubella, and rheumatoid arthritis. The other nine manufacturing companies each have 100 or fewer employees and produce a variety of disposable supplies, equipment for medical offices, and medical appliances.

Five firms are engaged solely in research and development at this time. Electronic medical devices are under development in four of the companies and the other is involved in biochemical research.

Results of Interviews with Medical Supply and Biomedical Industry Executives

Representatives of eight medical supply or biomedical research firms in the Salt Lake City area were interviewed about the important factors to consider when selecting a site for a medical supply or biomedical company, as well as the advantages and disadvantages which they have encountered while conducting business in Utah.[4]

[4]The individuals cited in this section were interviewed in September, 1983.

Site Selection Factors

The business interviews revealed that economic location factors are dictated by a firm's stage of development. The needs of a start-up company primarily involved in research and development are significantly different from the requirements of a mature manufacturing facility.

Fledgling high technology-oriented firms, among which are biomedical companies, have three basic requirements: technology, capital and management expertise. New biomedical companies are tied to their source of technology, which may be the University of Utah or a larger medical supply company from which its founders evolved. The capital needs of high technology start-ups are unique, arising from the risks involved and lengthy periods of research and development. Generally, a seven- to eight-year lag exists from the time a start-up is formed until investors share in the rewards. Their capital needs are most often met by individual venture capitalists or venture capital pools. In this type of arrangement, the venture capitalists or a member of the pool actively participates in the management of the new firm, rewarding additional funds as goals are achieved. By establishing a relationship with a venture capitalist or group, the entrepreneur receives the added benefit of management expertise.

Many of the important site selection factors noted by representatives of the mature medical supply manufacturing firms were similar to the findings of the 1972 study. Factors which company executives still believe to be very important are the supply of clerical and laboring help, labor costs, air and ground transportation, taxes and their proximity to markets.

The medical supply business has not remained the same in the past 12 years, however, and the changes have altered the relative importance of some site selection factors. The mature medical supply manufacturing companies are developing new product lines, implementing microprocessors and advanced immunodiagnostic procedures, which necessitate a greater reliance on scientific and technical expertise. Therefore, a supply of technically trained personnel and proximity to universities have greater importance now. Of more importance also is the quality of life which an area offers. A superior quality of life facilitates the recruitment efforts of companies. A critical shortage of electrical and mechanical engineers nationwide necessitates companies to aggressively recruit these personnel from other states. The

trend toward advanced technological products and procedures lends added importance also to proximity to similar firms. A concentration of medical supply and biomedical companies in an area increases the supply of labor trained in industry-specific skills, as well as promoting a transfer of knowledge relating to trends and new technology.

Advantages of Locating in Utah

Two advantages of locating a business in Utah mentioned by all the company executives were proximity to the University of Utah and the quality of life.

University Contribution – All the firms rely on the University's resources to some degree and for some firms the relationship might be termed "symbiotic." Three of the companies, Deseret Medical Inc., Research Industries Corporation, and Critikon have on-going research programs contracted with the University. Research conducted at the University of Utah has also been the basis for products developed and sold by Kolff Medical, Inc. (artificial hearts, drive systems), Motion Control (Utah arm), and Bunnell Biomedical (air pressure monitors for respirators).

Research programs at the University are monitored by local medical supply firms and entrepreneurs who are interested in acquiring licenses to develop new products. University technology is licensed through the Patent and Product Development Office which generally gives preference to Utah-based operations with which the university can maintain an on-going relationship. The University of Utah is one of a few universities which will accept an equity interest in a company as payment for a license. This arrangement makes it possible for start-up companies to acquire new technologies.

Companies also benefit from the University's services by renting time on specialized equipment, hiring faculty and staff as consultants, and having products clinically tested at the Medical Center. Several companies have also arranged for University of Utah faculty to teach courses to their technical staff.

Quality of Life Factors – Quality of life seems to be another universally agreed upon advantage of doing business in Utah. Factors such as attractiveness of the community, good schools, affordable housing, as well as cultural and recreational opportunities influence the morale and productivity of the work force and are heavily weighted by individuals who are being recruited by firms. Dr. Jiri Kratochvil of Critikon reports that it is not difficult to attract people to Utah. Milton Adair of Becton Dickinson believes Salt Lake City has an advantage over the Silicon Valley which is crowded and expensive.

Other Advantages – Aside from the University of Utah and a good quality of life, a Wasatch Front location offers many other advantages. Recently a comprehensive assessment of Salt Lake City's resources versus the resources of five other western cities convinced R.W. DeWeese, President of Catheter Technology, that his company should establish its manufacturing facilities in Salt Lake City.

Catheter Technology is a biomedical research company which has patented a new type of catheter. A private consulting firm, Landsing Company, of Menlo Park, California, was hired to select a manufacturing site. Salt Lake City proved to be the best location for economic reasons and rated number one on a separate measure of non-economic factors. The perceived advantages of a Salt Lake City site are listed below:

Economic

Equity of the tax structure – property tax, income tax, sales tax
Labor costs
Unemployment insurance costs
Worker compensation costs
Land costs

Non-economic

Availability and suitability of labor skills
Productivity of the work force
Higher educational and vocational training facilities
Sound transportation - air and ground
Attitude of local government and the state legislature toward business
Community appearance
Similar industrial technology
Transfer receptiveness – the willingness of employees to move to Salt Lake City

Disadvantages of Locating in Utah

Among the perceived shortcomings of a Utah location were a lack of local venture capital, the

distance from major medical supply centers in the East, and an insufficient supply of technical personnel.

Shortage of Local Venture Capital – Several individuals interviewed regarding the Utah biomedical industry commented that a lack of local venture capital is a barrier to the development of high technology start-up companies. Winslow Young of the University of Utah's Patent and Product Development Office believes that venture capital for Utah companies will have to come from Utah. In talking with venture capitalists in San Francisco, he has found they have no need to travel 900 miles to invest their money, when they have many investment opportunities just 90 miles away.

William Bowen of Technovest, a Salt Lake City company involved in the financing and management of high technology start-ups, explains that a portion of a company's venture capital should come from local sources. Out-of-state investors will be more apt to contribute to a venture capital pool if they know a local investor is monitoring the company.

Marlin Barrett of Arthur Young and Company in Salt Lake City has a different perspective about the problems of local high technology start-up companies. He recognizes the fact that Utah is lacking in venture capital; however, an abundance of capital is available from out-of-state for the right kind of firm. Having an innovative idea or prototype is not sufficient to obtain venture capital. An entrepreneur should be able to present to potential investors a business plan which demonstrates in dollars and cents their probable returns. Company founders should also be willing to have their company be managed by professional business managers and/or to allow investors to sit on the board of directors. Thus, part of the difficulty of local entrepreneurs in attracting capital, according to Mr. Barrett, is in packaging an investment opportunity to potential investors.

Mr. Barrett believes the publicity generated by the implantation of an artifical heart in Barney Clark, and a maturing of the biomedical industry in Utah will attract mediators to the state, whose role it is to link up venture capitalists with entrepreneurs. He foresees forums held in Salt Lake City in which venture capitalists from throughout the nation meet owners of local biomedical companies and review their business plans.

Distance from National Medical Supply Firms – For some of the executives of the manufacturing firms, their distance from the East Coast where medical supply firms are concentrated, is a drawback. Paul Creager, former president of Deseret Medical, believes there is a danger of losing touch with what's happening in the business. Mr. Adair of Becton Dickinson noted that their distance from the industry center makes it difficult to recruit some people to Utah. Individuals who are interested in rapid career advancement are reluctant to move out of the mainstream.

Other Disadvantages – Another disadvantage mentioned by the large medical manufacturing firms is an insufficient supply of technical people. Most of the top scientific and engineering personnel have to be recruited from out-of-state. This problem is not unique to Utah, however. California engineering schools now produce only half the engineers annually absorbed by the state's high tech companies.

Utah's distance from population centers make distribution costs higher. Most of the products shipped from the large medical supply companies are directed to points east of the Mississippi.

Conclusions

The medical supply and biomedical industries are appropriate industries to target for development based on their projected growth and Utah's competitive advantage as an attractive location for these industries. Their future development may be enhanced by implementing either of two broad strategies.

First, out-of-state companies may be encouraged to expand into Utah. This study suggests that some types of medical supply companies are more likely candidates for expansion into the state than others.

The major medical supply corporations are not likely to establish new facilities in Utah. Generally the large health care companies expand by purchasing smaller companies. When cutting costs is the incentive to build new manufacturing plants, they frequently select tax havens, such as Puerto Rico or Ireland, or more recently, countries with low wage rates, i.e., Mexico and the Far Eastern countries. Utah is also likely to find itself in competition with the southeastern states. This region offers low wage rates and is

located much closer to the headquarters of the major health care corporations which are centered in the northeast, middle Atlantic, and north central states.

The type of company which may receive the greatest benefits by locating in Utah is a small medical supply or biomedical firm which has outgrown its original location. The firm's labor requirements may exceed the supply of local talent, and it cannot attract the people it needs. Prototypes may need to be tested or consultants hired to assist with the research. A company may be ready to increase production and is searching for a less costly manufacturing site.

A second strategy to further the development of the medical supply and biomedical industries is to create a climate in which these businesses, and particularly start-up companies, can thrive. Eventually the small biomedical firms concentrating in research and development should evolve into larger mature manufacturing companies. Paul Creager (formerly with Deseret Medical) suggests the state "take a page from the past," referring to the manner in which the medical supply industry in Utah historically has developed. The responsibility for creating a suitable environment rests primarily with the Utah State Legislature, which establishes policies and initiates actions that affect the business climate.

The tax structure can be more or less beneficial to businesses. Utah's corporate income tax rate of only 4 percent and relatively low property taxes are favorable to businesses.

Educational policies directly influence the quality of the labor force. Utah's mandatory school attendance law which requires individuals to stay in school until they are 18 years old or until graduation from high school is largely responsible for the fact that, of all states, Utah has the second highest percentage of its adult population completing high school. However, years in high school may not be as important as the quality of education. The labor demands of medical supply and biomedical industries for scientific and technical personnel have clear implications for Utah's secondary schools, which are responsible for providing the future labor force with a foundation in mathematical and scientific skills and knowledge.

Many of the specialized personnel sought by medical supply and biomedical companies require training beyond high school. The technical colleges have an important role in preparing electronics and lab technicians; and the four-year colleges and universities are the training grounds for future engineers, biologists, chemists, and computer scientists.

The state government can be influential in creating an environment in which medical supply, biomedical and other high technology industries may thrive by insuring that its public educational institutions are capable of providing the mathematical, scientific, and technical training required for future workers in these industries.

Programs which lend assistance to small businesses and new high technology companies are another means by which the state may foster the development of the biomedical industry. A comprehensive description of state programs designed to aid innovative companies is included in *States' Efforts to Encourage Technological Innovation* which reports the results of a survey taken in late 1982 by the National Governors' Association Task Force on Technological Innovation. Programs provided by the states include research incubators, entrepreneurial training and development, public non-profit corporations which provide financial assistance, and tax credits to individuals investing in venture capital funds.

Utah is among the states that have initiated programs aimed to assist innovative enterprises. In 1983 the Utah Legislature enacted two bills designed to increase the pool of venture capital. The Utah Technology and Innovation Act created the Utah Technology Finance Corporation, which will provide matching funds to high technology start-up companies. Initial funding for the corporation will come from state and federal government sources, with private sources eventually providing the majority of funding. Another bill having implications for high technology entrepreneurs relates to changes in the rules governing the investment of state retirement funds. The state retirement board is now permitted to direct funds to investments other than those rated in the top three classifications. As a result of this change, the retirement board has decided to consider the investment potential of venture capital pools.

The growing health care industry and the resources which the Wasatch Front can provide to this industry present an important economic development opportunity to the state. With the implementation of specific strategies designed to attract firms to expand into Utah, and more importantly, attention given to the creation of a business climate which nurtures new biomedical companies, the development of the medical supply industry and a biomedical research center could undoubtedly be accelerated.

Utah Medical Supply and Biomedical Research Firms

American Laser Corporation
2832 South 3850 West
Salt Lake City, Utah 84104
972-1311
Product: Argon based laser for surgery

Ballard Medical, Inc.
6864 South 300 West
566-4693
Midvale, Utah 84047
Product: Electrosurgical blade cleaner, scrub brush system, tracheal suctioning device

BSD Medical Corporation
420 Chipeta Way
Salt Lake City, Utah 84108
582-5550
Product: Designs and manufactures hyperthermia equipment, an emerging cancer therapy

Becton Dickinson Automated Immunochemistry Systems
217 Wright Brothers Drive
Salt Lake City, Utah 84116
972-8833
Product: Automated radioimmunoassay instrumentation

Bio-logics Products, Inc.
7918 South 1530 West
West Jordan, Utah 84084
561-9208
Product: Patient ID systems

Biomaterials International, Inc.
420 Chipeta Way No. 110
Salt Lake City, Utah 84108
583-8444
Product: Biomaterials International (BI) provides consulting and/or R & D to the biomedical, polymer, and pharmaceutical industries. The staff consists of scientists and engineers who are affiliated with the University of Utah. Several members of the staff are internationally recognized as major contributors in their respective fields of study. BI's areas of expertise include polymer synthesis and characterization, blood and tissue compatibility, membrane permeation, drug delivery systems, organic synthesis, and materials fabrication and evaluation.

Bunnel Biomedical, Inc.
391 Chipeta Way No. G
Salt Lake City, Utah 84108
581-3502
Product: Presently manufacturing an air pressure monitor that signals the nurse if a patient's respirator is not working properly. In development is a high frequency ventilator for infants and children.

Chem Biochem Research
391 Chipeta Way No. G
Salt Lake City, Utah 84108
583-2072
Product: Specialty organic and biochemical manufacturing and chemical consulting

Critikon
391 Chipeta Way No. E
Salt Lake City, Utah 84108
582-6048
Product: Engaged in research and development of chemfets devices used to detect ions in the blood.

Custom Orthopedics
5920 South 1100 East
Salt Lake City, Utah 84117
268-3461
Product: Leg braces, back braces, neck supports

Delmed
475 West Cutter Lane
Ogden, Utah
626-4515
Product: Solutions for kidney dialysis

DNA Medical
3385 West 1820 South
Salt Lake City, Utah 84104
973-4600
Product: Disposable catheter products and critical care monitoring equipment, i.e., microelectronic volumetric controller

Deseret Medical
9450 South State Street
Sandy, Utah 84070
255-6851
Product: Disposable intravenous infusion and operating room products

Diasonics Cardio-Imaging, Inc.
2341 South 2300 West
Salt Lake City, Utah 84119
973-6800
Product: Computer-driven ultrasound equipment

Dynatronics Research Corporation
326 South Redwood Road
Salt Lake City, Utah 84104
974-5109
Product: A laser biostimulation instrument used for pain relief.

Endotek
417 Wakara Way
Salt Lake City, Utah 84108
582-0515
Product: In research and development

Gull Labs
890 East 5400 South
Salt Lake City, Utah 84107
263-3524
Product: Immunodiagnostic test kits

Healthcare Group, Inc.
165 Mountain Way Drive
Orem, Utah
224-2273
Product: Disposable medical products, a micro-processor-based enteral feeding pump, and a denture relining material

The Health Chair Group
2601 South 2700 West
Salt Lake City, Utah 84119
972-3165
Product: Stools, chairs, tables, carts for medical and dental offices

HGM, Inc.
3705 West 1987 South
Salt Lake City, Utah 84104
972-0500
Product: Argon, Crypton, and Yag lasers for surgery

Immuno-Diagnostic Products, Inc.
54 South 130 East
North Salt Lake, Utah 84054
298-7535
Product: Diagnostic kits for the detection of antibodies using immunofluorescence procedures.

Kolff Medical, Inc.
374 West 600 North
Salt Lake City, Utah 84103
531-7022
Product: Artificial hearts and drive systems. Developing artificial ear

M-D. Inc.
2601 South 2700 West
West Valley City, Utah 84119
972-3165
Products: Equipment for dental offices, surgery tables, and podiatry equipment

Medical Sky Hook Company
583 West 3560 South
Salt Lake City, Utah 84115
262-1471
Product: Overhead IV systems

Medicorp, Inc.
240 West 2950 South
Salt Lake City, Utah 84115
487-8244
Product: Negative pressure converter for renal dialysis, portable traction splints

Microbiological Research Corporation
40 West 500 South
Bountiful, Utah 84010
292-2419
Product: Diagnostic kits for the detection of antibodies using immunofluorescence procedures

Mideco
(Microbiological Development and Control)
420 Chipeta Way No. 280
Salt Lake City, Utah 84108
582-3136
Product: Biological Quality testing of food and drug products and testing of new medical equipment and biological materials

(continued on page 12)

Utah Business Statistics

STATEWIDE STATISTICAL DATA

	Sept. 1983	Aug. 1983	Sept. 1982	% Change From Year Ago	12 Month Average Sept. 1983	12 Month Average Sept. 1982	% Chg.
Agriculture							
Cash Receipts from Farm Marketing (thous. of dol.)	48,041	42,817	56,641	-15.2	47,504.1	44,566.3	6.6
Livestock and Livestock Products (thous. of dol.)	31,983	31,074	41,358	-22.7	36,256.1	33,071.2	9.6
Crops (thous. of dol.)	16,058	11,743	15,283	5.1	11,470.7	11,495.2	-0.2
Avg. Prices Rec'd by Farmers (15th of each mo.)(dol.):							
Beef Steers and Heifers (cwt)(thou.)	49.7	52.3	56.4	-11.9	55.8	57.5	-2.9
Lambs (cwt)	43.7	43.8	48.8	-10.5	50.2	50.6	-0.8
Milk, Wholesale (cwt)	12.8	12.5	12.7	0.8	12.9	13.0	-0.7
Alfalfa Hay, Baled (per ton)	82.0	81.0	65.6	25.0	76.2	64.6	17.9
Livestock Slaughtered (live weight):			(July-Sept '82)				
Cattle (thous. of lbs)	25,256	25,367	(60,527.4	na	na	na	na
Sheep and Lambs (thous. of lbs.)	262	276	(626.4)	na	na	na	na
Hogs and Pigs (thous. of lbs.)	4,211	4,023	(10,167.3)	na	na	na	na
Finance							
Loans, Total, Utah Member Banks (mil. of dol.)[a]	4,233	4,182	3,714	14.0	4,027.2	3,603.0	11.8
Investments, Total, Utah Member Banks (mil. of dol.)[a]	1,036	1,032	1,035	0.1	1,019.8	986.8	3.3
Deposits, Total, Utah Member Banks (mil. of dol.)[a]	5,034	5,085	4,577	10.0	4,896.8	4,329.1	13.1
Demand Deposits of Banks, Total, Utah (mil. of dol.)[a]	56	63	47	19.1	57.4	58.0	-1.1
Other Demand Deposits, Total, Utah (mil. of dol.)[a]	1,082	1,112	1,049	3.1	1,051.5	1,020.2	3.1
Time Deposits, Total, Utah (mil. of dol.)[b]	3,896	3,910	3,483	11.9	3,845.3	3,307.9	16.2
Savings, Savings and Loan Association (mil. of dol.)[b]	1,839.0	1,800.9	1,619.5	13.6	1,732.2	1,647.8	5.1
New Corporation (no.)	495	501	420	17.9	518.2	506	2.4
Tax Collections by the State of Utah (thous. of dol.)							
Total Tax Collections	54.800	187,772.6	39,130.6	40.0	90,202.0	85,429.0	5.6
Sales & Use Tax	2,170.1	91,816.9	3,625.6	-40.1	32,783.6	32,125.9	2.0
Motor Fuel Tax	7,369.9	7,276.4	4,663.5	58.0	5,768.4	5,619.2	2.7
Individual Income Tax	27,215.7	50,224.4	23,172.6	17.4	29,510.1	27,131.2	8.8
Corporation Franchise Tax	2,183.9	471.4	999.6	118.5	2,750.3	3,283.2	-16.2
Employment							
Civilian Labor Force (thous.)	661.8	662.9	656.2	0.9	650.3	642.0	1.3
Total Employed Persons	623.0	612.4	607.6	2.5	596.9	596.8	0.0
Unemployed	38.8	50.5	48.6	-20.2	53.5	45.4	17.8
Percent Total Labor Force	5.9	7.6	7.4	-20.3	8.3	7.1	16.5
Employees on Nonagricultural Payrolls (thous. of jobs)	579.2	565.8	564.7	2.6	559.8	561.4	-0.3
Manufacturing	88.9	87.4	84.7	5.0	83.7	87.5	-4.3
Mining	14.4	14.1	17.1	-15.8	14.2	19.7	-27.5
Contract Constructuion	33.5	32.7	29.9	12.0	27.6	27.3	1.1
Transportation, Communication and Utilities	37.0	34.3	36.3	1.9	35.7	35.2	1.3
Wholesale Trade	34.9	34.8	34.3	1.7	34.1	34.9	-2.4
Retail Trade	100.9	100.0	98.7	2.2	98.3	97.2	1.1
Finance, Insurance and Real Estate	28.5	28.4	26.8	6.3	27.6	26.4	4.7
Services[c]	113.4	110.6	110.9	2.3	110.4	107.5	2.7
Federal Government[d]	37.1	37.3	37.2	-0.3	37.1	37.3	-0.6
State Government[d]	32.7	32.0	31.9	2.5	34.0	33.0	3.2
Local Government[d]	58.0	54.2	57.0	1.8	57.0	55.5	2.7
Average Weekly Hours							
Manufacturing	39.2	39.3	38.2	2.6	38.8	38.9	-0.3
Mining	41.7	42.4	42.2	-1.2	42.0	42.6	-1.4
Contract Construction	39.1	39.4	34.0	15.0	38.0	37.6	1.1
Wholesale Trade	38.7	38.5	36.7	5.4	37.4	37.2	0.5
Retail Trade	29.1	29.5	28.1	3.6	28.5	28.2	1.1
Amount of Unemployment Comp. (thous. of dol.)	5,349.0	7,040.3	11,211.0	-52.3	10,318.3	9,787.4	5.4
Construction							
Total Construction (thous. of dol.)	169,400	147,200	123,600	37.1	483,708.3	89,525	440.3
Residential	61,900	73,800	50,800	21.9	116,501.2	35,534.5	227.9
Nonresidential	53,700	41,800	66,300	-19.0	38,524.9	38,958.2	-1.1
Public Works and Utilities	53,800	31,500	6,500	727.7	382,200.4	9,375.4	3,976.6
Total Permit Construction (thous. of dol.)[e]	115,979.7	142,187.6	64,414.8	80.1	91,445.4	80,687.1	13.3
Residential	64,099.2	85,253.8	31,420.5	106.9	44,273.2	21,847.3	102.6
Nonresidential	28,837.2	40,347.5	23,770.6	21.3	29,527.3	37,961.6	-22.2
Additions, Alterations and Repairs	22,143.3	16,586.3	9,223.7	140.1	11,216.9	14,318.1	-21.7
New Dwelling Units (no.)	1,318	2,070	784	68.1	1,133.1	619.6	82.9
Tourism/Travel							
Air Passengers (total no. on and off)	537,217	656,981	516,743	4.0	597,929.7	419,411.6	42.6
Highway Traffic Count Across State Lines	39,642	48,484	40,956	-3.2	35,087.2	na	na
Transient Room Taxes (thous. of dol.)	10.1	681.8	25.8	-60.9	-9.8	na	na
Visits, State, Nat'l. Parks, Monuments (thous.)	1,248.4	1,850.1	1,200.3	4.0	941.4	1,045.2	-9.9
General							
New Cars and Truck Sales	na	na	2,439	na	na	4,036.6	na
C.P.I. (National Index -- 1967 = 100)	301.8	300.3	293.3	2.9	295.9	286.0	3.5
Telephones owned by Mt. Bell (non-Residential)[f]	70,084	70,057	76,076	-7.9	72,533.3	76,718.6	-5.5
Telephones owned by Mt. Bell (Residential)	341,389	344,595	426,457	-19.9	390,791.1	430,263.7	-9.2
Electric Customers (Commercial)[g]	38,912	38,908	37,605	3.5	38,465.6	37,851.2	1.6
Electric Customers (Residential)	405,017	401,341	395,935	2.3	404,350.1	398,601.1	1.4
Natural Gas Customers (Residential & Commercial)	396,020	416,591	387,932	2.1	401,109.9	391,685.0	2.4
Natural Gas Customers (Industrial)	528	535	549	-3.8	542.6	544.8	-0.4
Production							
Net Electric Power Utilized (mil. of kwh)	1,127.6	1,134.2	966.1	16.7	1,068.6	1,025.2	4.2
Crude Oil to Refineries (thous. of bbls.)	4,394.6	4,401.5	3,779.0	16.3	4,183.5	3,966.0	5.5
Crude Oil Production (thous. of bbls.)	na	2,483.1	1,492.0	na	na	1,934.3	na
Natural Gas Production (mil. of cu. ft.)	na	6,758.1	5,261.3	na	na	7,630.3	na
Coal (thous. short tons)	1,271	1,318	1,310	-3.0	1,250.6	1,408.3	-11.2
Copper (thous. metric tons)[h]	12,865	14,247	12,170	5.7	14,461.5	16,645.9	-13.1

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Utah Business Statistics

MULTI-COUNTY PLANNING DISTRICT STATISTICAL DATA	Sept. 1983	Aug. 1983	Sept. 1982	% Change From Year Ago	12 Month Average Sept. 1983	12 Month Average Sept. 1982	% Chg.
Wasatch Front (Salt Lake, Tooele, Davis, Weber, Morgan							
Non-Ag. Employment (thous.)	409.2	401.4	397.5	2.9	397.3	395.7	0.4
Auth. Permit Construction (Mil. of dol.)	81.1	97.2	42.7	89.9	59.4	49.3	20.5
New Dwelling Units	867	1,480	492	76.2	785.5	332.9	135.9
Postal Receipts (thous.)[i]	11,987.3	5,971.7	5,540.9	116.3	6,886.5	6,082.8	13.2
Electric Customers (Residential)	287,249	286,607	281,757	1.9	286,144.6	281,880.5	1.5
Electric Customers (Commercial)	23,372	23,348	22,831	2.4	23,062.5	22,876.6	0.8
Natural Gas Customers (Residential)	291,926	291,669	285,768	2.2	293,173.0	288,237.5	1.7
Natural Gas Customers (Industrial)	384	391	405	-5.2	408	399.8	0.0
Salt Lake City							
Non-Ag. Employment (Salt Lake and Tooele)(thous.)	310.3	303.9	301.4	3.0	300.8	299.6	0.4
Auth. Permit Construction (mil. of dol.)	18.9	18.1	8.3	127.7	10.5	15.1	-30.6
New Dwelling Units	25	8	5	400.0	22.2	21.5	3.1
Postal Receipts (thous.)[i]	9,866.4	4,941.0	4,538.0	117.4	5,633.1	4,931.9	14.2
Natural Gas Customers (Residential)	56,336	56,293	56,054	0.5	57,210.3	57,202.6	0.0
Natural Gas Customers (Induatrial)	134	139	141	-5.0	140.4	145.9	-3.8
Telephones owned by Mt. Bell (Business)[f,j]	36,584	36,555	39,632	-7.7	371,786.9	40,387.9	-6.4
Telephones owned by Mt. Bell (Residential)[f,j]	175,019	177,257	216,349	-19.1	197,695.2	217,239.4	-9.0
Ogden							
Non-Ag. Employment (Weber, Morgan, Davis)(thous.)	98.9	97.5	96.1	2.9	96.5	96.1	0.4
Auth. Permit Construction (mil. of dol.)	1.7	4.0	1.8	-5.6	2.1	1.6	30.7
New Dwelling Units	19	3	8	137.5	15.3	12.9	18.7
Postal Receipts	862.9	426.3	400.0	115.7	501.1	454.9	10.2
Natural Gas Customers (Residential)	21,897	22,179	21,857	0.2	22,466.1	22,293.2	0.8
Natural Gas Customers (Industrial)	47	48	51	-7.8	50.5	50.3	0.3
Telephones owned by Mt. Bell (Business)[f,k]	6,428	6,425	6,985	-8.0	6,671.3	7,074.5	-5.7
Telephones owned by Mt. Bell (Residential)[f,k]	35,252	34,254	43,423	-18.8	38,991.3	43,667.1	-10.7
Mountainlands (Utah, Wasatch, Summit Counties)							
Non-Ag. Employment (thous.)	73.2	69.6	72.1	1.5	70.1	71.2	-1.5
Auth. Permit Construction (mil. of dol.)	20.6	28.4	6.8	202.9	15.1	12.6	19.4
New Dwelling Units	272	379	71	283.1	162.8	102.2	59.2
Postal Receipts (thous.)[i]	1,534.2	740.9	684.3	124.2	845.5	780.6	8.3
Electric Customers (Residential)	54,261	52,622	52,367	3.6	54,920.7	54,664.7	0.5
Electric Customers (Commercial)	6,100	6,285	5,750	6.1	6,136.0	5,989.5	2.4
Natural Gas Customers (Residential)	62,640	62,814	61,227	2.3	63,377.2	61,967.6	2.3
Natural Gas Customers (Industrial)	77	77	76	1.3	76.8	79.7	-3.7
Provo							
Non-Ag. Employment (thous.)(Utah Co.)	66.7	63.1	65.6	1.7	63.5	64.1	-0.9
Auth. Permit Construction (mil. of dol.)	5.4	9.8	1.1	390.9	4.2	4.7	-11.5
New Dwelling Units	45	143	5	800.0	49.0	40.3	21.7
Postal Receipts (thous.)[i]	852.4	418.8	381.4	123.8	461.6	438.9	5.2
Natural Gas Customers (Residential)	16,089	16,329	15,789	1.9	16,877.2	16,593.5	1.7
Natural Gas Customers (Industrial)	30	30	31	-3.2	32.9	35.5	-7.3
Telephones owned by Mt. Bell (Business)[f,l]	5,757	5,743	6,525	-11.8	6,058.7	6,488.3	-6.6
Telephones owned by Mt. Bell (Residential)[f,l]	29,532	28,659	39,513	-25.3	34,454.6	39,320.7	-12.4
Central Utah (Juab, Millard, Sanpete, Sevier, Piute, Wayne)							
Non-Ag. Employment (thous.)	15.0	14.4	13.3	12.8	13.3	12.7	4.7
Auth. Permit Construction (mil. of dol.)	1.5	2.0	2.0	-25.0	1.7	1.1	50.8
New Dwelling Units	22	16	17	29.4	25.2	30.4	-17.1
Postal Receipts (thous.)[i]	146.5	82.2	77.0	90.3	86.0	88.3	-2.6
Electric Customers (Residential)	9,921	9,890	9,648	2.8	9,739.8	9,530.1	2.2
Electric Customers (Commercial)	1,859	1,873	1,837	1.2	1,843.8	1,811.4	1.8
Uintah Basin (Duchesne, Daggett, Uintah Counties)							
Non-Ag. Employment (thous.)	13.2	13.2	13.0	1.5	12.6	13.2	-4.5
Auth. Permit Construction (mil. of dol.)	1.4	2.2	5.0	-72.0	2.6	5.4	-51.9
New Dwelling Units	20	24	61	-67.2	10.6	54.6	-80.6
Postal Receipts (thous.)[i]	194.1	92.7	93.7	107.2	117.8	101.1	16.5
Electric Customers (Residential)	6,283	6,260	5,978	5.1	6,264.6	5,728.9	9.4
Electric Customers (Commercial)	974	965	872	11.7	945.6	821.9	15.1
Natural Gas Customers (Residential)	5,447	5,407	5,349	1.8	5,298.3	5,156.1	2.8
Natural Gas Customers (Industrial)	5	5	4	25.0	4.6	4.6	-0.4
Bear River (Box Elder, Cache, Rich Counties)							
Non-Ag. Employment (thous.)	33.7	32.9	31.6	6.6	32.5	31.9	1.9
Auth. Permit Construction (mil. of dol.)	5.5	3.1	3.1	77.4	4.4	3.7	18.9
New Dwelling Units	42	44	61	-31.1	58.1	33.9	71.4
Postal Receipts (thous.)[i]	516.8	248.4	254.4	103.1	295.9	287.2	3.0
Electric Customers (Residential)	24,670	23,322	24,252	1.7	24,374.2	24,856.0	-1.9
Electric Customers (Commercial)	3,064	2,928	2,956	3.7	2,988.5	3,052.3	-2.1
Natural Gas Customers (Residential)	26,055	26,176	25,574	1.9	25,270.5	24,807.5	1.9
Natural Gas Customers (Industrial)	47	47	49	-4.1	41.8	41.4	1.0
Southeastern (Carbon, Emery, Grand, San Juan Counties)							
Non-Ag. Employment (thous.)	17.5	17.4	21.1	-17.1	17.8	21.1	-15.6
Auth. Permit Construction (mil. of dol.)	1.0	2.3	1.7	-41.2	2.6	3.2	-17.4
New Dwelling Units	18	17	31	-41.9	30.6	31.6	-3.1
Postal Receipts (thous.)[i]	147.4	78.5	78.6	87.5	88.9	84.7	5.0
Electric Customers (Residential)	11,378	11,412	10,987	3.6	11,759.0	11,566.3	1.7
Electric Customers (Commercial)	1,508	1,491	1,386	8.8	1,491.1	1,465.1	1.8
Natural Gas Customers (Residential)	9,952	10,525	10,014	-0.6	10,388.1	10,052.6	3.3
Natural Gas Customers (Industrial)	15	15	15	0.0	15.6	15.0	4.0
Southwestern (Beaver, Iron, Washington, Garfield, Kane Counties)							
Non-Ag. Employment (thous.)	17.4	16.9	16.0	8.8	16.1	15.6	3.2
Auth. Permit Construction (mil. of dol.)	5.0	7.0	3.2	56.3	4.8	4.2	13.1
New Dwelling Units	77	110	51	51.0	73.2	45.2	61.9
Postal Receipts (thous.)[i]	275.6	104.8	103.9	165.3	150.4	136.7	10.0
Electric Customers (Residential)	11,255	11,220	10,946	2.8	11,159.5	10,387.3	7.4
Electric Customers (Commercial)	2,035	2,018	1,973	3.1	1,999.4	1,835.1	9.0

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Utah Medical Supply and Biomedical Research Firms (continued)

Motion Control, Inc.
1005 South 300 West
Salt Lake City, Utah 84101
364-1958
Product: Artificial arm and hand. The company has also developed the "phoresor," which enables medication to be passed through the skin without use of a needle, and the "subcutaneous peritoneal access device" (SPAD) which is implanted in the abdomens of diabetics and enables insulin to be administered at a steady rate.

Nytone Medical
2424 South 900 West
Salt Lake City, Utah 84119
973-4090
Product: Enuretic alarm

Research Industries Corporation
1847 West 2300 South
West Valley City, Utah 84117
972-5500
Product: Research Industries is the only U.S. company authorized by the FDA to manufacture DMSO for human use.

Sorenson Research
4455 Atherton Drive
Murray, Utah 84123
262-2688
Product: Disposable intravenous infusion products

Telemed Cardio-Pulmonary Systems
5181 South 300 West
Murray, Utah 84107
268-3480
Product: Computer-assisted diagnostic devices for cardio-pulmonary systems

Utah Medical Products
1212 E. 60 South
Lehi, Utah 84043
768-3584
Product: Disposable arthroscopy products, medical supplies used in respiratory care and intravenous therapy

Wescor, Inc.
459 South Main
Logan, Utah 84321
752-6011
Product: Medical electronic instruments — a vapor pressure osmometer, which measures concentrations of biological fluids; a colloid osmometer which measures the balance of high molecular proteins in blood; and a macroduct sweat collection system for the diagnosis of cystic fibrosis

BUSINESS STATISTICS
Sources and Footnotes

Sources:

Agriculture farm marketings, livestock slaughter, farm prices: U.S. Department of Agriculture
Loans, Investments, Deposits: Federal Reserve reports
Savings, Savings and Loan Association: Utah savings and loan institutions
New Corporations: Utah Secretary of State
Tax Collections: Utah State Tax Commission
Employment Data: Utah Department of Employment Security
Construction: Dodge Construction Statistics and BEBR
Air Passengers: Salt Lake International Airport, statistics service
Traffic Count: Utah Department of Transportation, Travel Analysis Unit
Visits to State and National Parks and Monuments: U.S. Forest Service; Utah State Parks and Recreation Department
Truck and car sales: Utah Automobile Dealers Registrations Service Company
Telephone, electric, natural gas customers: cooperating Utah utility companies
Net electric power utilized: cooperating Utah power companies
Crude oil to refineries: cooperating Utah oil refineries
Copper production: U.S. Bureau of Mines
Coal production: U.S. Department of Energy
Oil and gas production: State of Utah Division of Oil, Gas and Mining

Footnotes:

[a] End of Period, includes member banks of Federal Reserve System
[b] As of the close of business on last day of the month
[c] Includes nonprofit and religious
[d] Includes public schools and colleges
[e] Total new construction plus additions, alterations and repairs
[f] Figures shown do not include telephones bought by businesses and individual customers, and do not include telephones owned by other telephone companies.
[g] Beginning with this issue, the numbers of electric customers have been revised for the state and Southeastern District due to the acquisition of C.P. National customers to UP&L.
[h] Beginning January 1979, data reported in metric tons; to convert metric tons to short tons, multiply by 1.10231
[i] Postal receipts are reported every four weeks. Sales report for one month during each year includes total sales of two four-week periods. In 1983, this double-reporting occurred in the month of September.
[j] [k] Includes Salt Lake County and Bountiful.
Includes Weber and Morgan Counties.
[l] Includes Orem and Springville.
[P] Preliminary
na Not available.

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